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Developments of the Arctic Issues
and Responses of Nordic States
Surrounding Arctic Circle



海洋委員會
Ocean Affairs Council

發行



Working Together for Ocean Sustainability

Translated by Linguitronics

Keywords: Ocean, European Union, Climate Change

Minister of the Ocean Affairs Council: Chung-Wei Lee

Every country has its own development strategy for facing issues of the ocean, but it is even more important for countries to coordinate and interact. It takes unlimited wisdom for regional organizations to regulate and negotiate with member States.

This issue features the European Union (EU) and introduces the Directorate-General for Maritime Affairs & Fisheries of the European Commission, which is responsible for executing Europe's integrated ocean policy. It also takes a look at the EU's Marine Strategy Framework Directive and ocean sustainability goals. From an industry perspective, the EU establishes plans to effectively combat IUU fishing through the IUU Regulation, and disclosed development opportunities of existing fields, such as coastal travel and shipbuilding, and emerging fields, such as ocean energy and blue bio-economy, in the Blue Economy Report 2019. Europe is the leader in developing floating offshore wind power technologies and the latest trends such as wave power generation, which are worth learning from. Also, climate change has brought unprecedented attention to the Arctic Circle, and how Arctic Circle countries develop and use Arctic resources; their utilization of sea routes, resource development, and environmental protection also deserve our attention.

Ocean sustainability is an issue for all countries around the world under global warming, and we must all do what we can to show concern for international ocean affairs and seek cooperation opportunities!

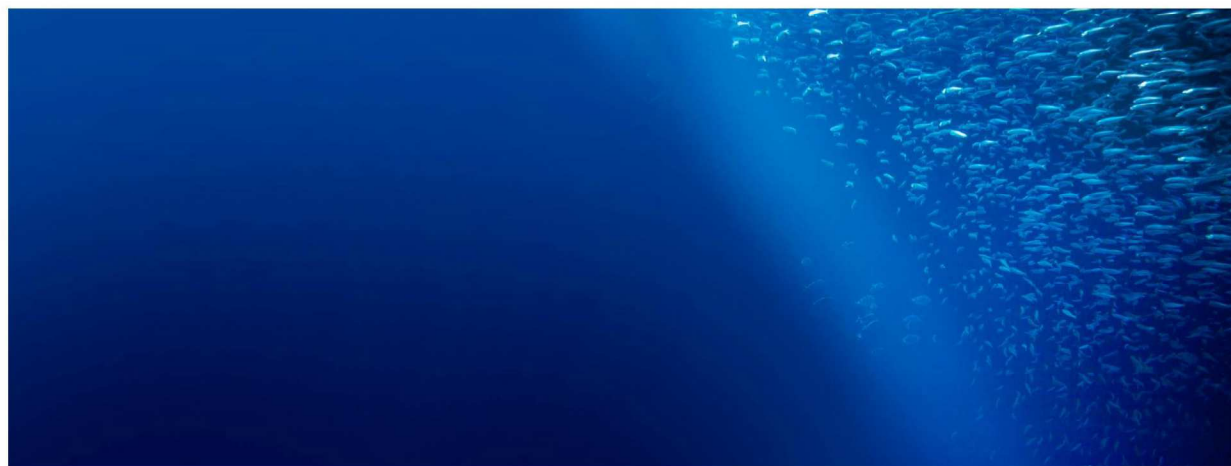


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Developments of the Arctic Issues and Responses of Nordic States Surrounding Arctic Circle

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Translated by Linguitronics

Keywords: Arctic issues, Arctic Ocean, Arctic Council

Arctic issues are developing, whether it is about sea routes, resource development, or environmental protection, these issues demand Taiwan's attention and Taiwan must search for possible cooperation opportunities.



Image by Sarah N from Pixabay

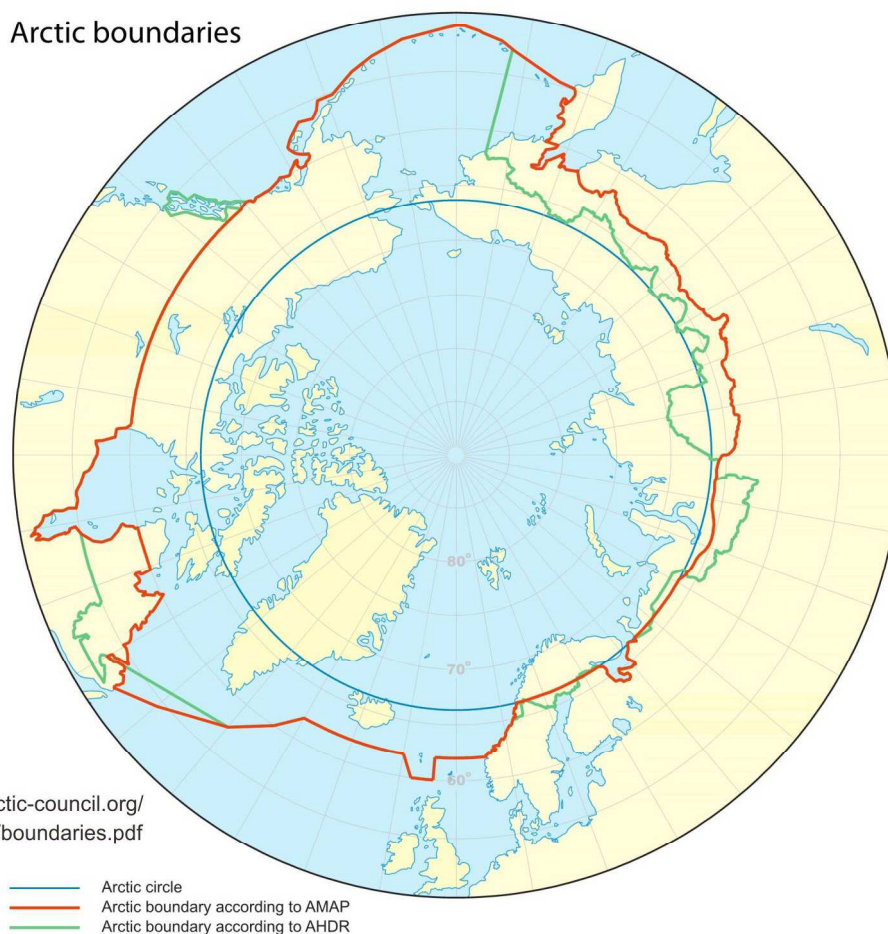
Introduction

Arctic Circle nations refer to nations with territory north of 66.5 degrees north (the Arctic Circle). Eight countries meet this criterion, namely the US, Russia, Canada, Denmark, Iceland, Finland, Norway, and Sweden. These countries govern the Arctic affairs through the Arctic Council. This study examines Arctic issues that have been noted in recent years, and ascertains the attitude or actions taken by several Arctic countries (Denmark, Norway, Finland, Sweden, and Iceland) with regard to the issues.

Developments in Arctic Issues

International research on the Arctic over the years has mainly focused on opening new sea routes, developing natural resources, and protecting the environment and ecology of the polar region. This led to the need to formulate a national development strategy and control safety status.

Arctic boundaries



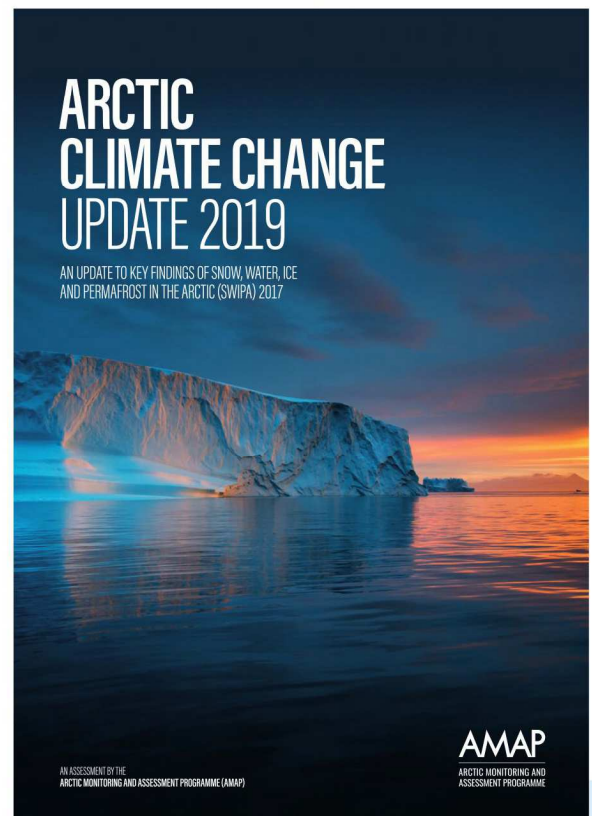
With regard to sea route opening, global warming caused by climate change has significantly reduced the ice cover of the Arctic Ocean. The coastal areas of Canada and Russia, which are adjacent to the Arctic Ocean, will not be covered in ice during the summer after 2040. This means that commercial navigation will become a possibility. The conventional shipping route along the coast of China through the Strait of Malacca to Europe takes 5 weeks, but the route through the Arctic Ocean will only take about 3 weeks, and will also allow ships to avoid sea areas where they can easily be attacked by pirates. Drastic changes in global shipping routes can be foreseen; it will also lead to changes in global geopolitics.

In terms of resources, statistics of the United States Geological Survey show that the oil reserves in the Arctic region are estimated to hold 90 billion barrels, natural gas reserves are estimated at 1,669 trillion m³, and liquid natural gas reserves are estimated at 44 billion barrels. What is important is that 84% of these resources are located in offshore areas. Furthermore, coal reserves in the Arctic region account for one fourth of global coal reserves, and is estimated to weigh over 1 trillion tons. The coal reserves are characterized as low sulfur, clean, and highly efficient. There are also massive amounts of strategic minerals, such as copper-nickel-plutonium complex, gold, silver, diamond, uranium, and iron. In addition to those mineral resources, there are also biological resources. The Arctic Ocean is generally determined to have an abundance of fishery resources. According to catch statistics, the annual catch through joint development by Arctic Circle countries reached 6 million tons starting in the 1960s. The countries passed the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean in 2018 to protect fishery resources in the Arctic region. It is the first agreement in the world to regulate fisheries in a large area before fishing activities have even begun.

With regard to environmental protection, Arctic Circle nations signed the Arctic Environmental Protection Strategy in 1991 to control pollution in the Arctic. This document is currently the most representative guideline for handling arctic environmental governance issues. It establishes an arctic environmental governance platform and communication channels for Arctic Circle nations and other stakeholders, and therefore has practical importance. However, since it is not a legally binding document, the document is a soft law in concept, so its normative force is somewhat weak. Furthermore, the Arctic Monitoring and Assessment Program (AMAP) has been implemented under the framework of the Arctic Council to effectively track pollution in the Arctic region. The report "AMAP Climate Change Update 2019: An Update to Key Findings of Snow, Water, Ice and Permafrost in the Arctic (SWIPA) 2017" published by the AMAP on May 6 this year (2019) pointed out that the Arctic region is rapidly becoming warmer, which has resulted in many ongoing changes in the region, including decreases in area covered by ocean ice and glaciers, and resulting changes to the land and marine ecosystems. Such changes will affect the adaptability of Arctic communities and challenge their recovery ability.

The Position or Actions of Arctic Circle Nordic Countries

Denmark is an Arctic Circle nation because its territory of Greenland is located in the Arctic Circle. Greenland is covered in ice and snow throughout the year, and even though it has important mineral resources, such as rare earth, iron, copper, and uranium, weather conditions make mining too costly. However, warmer weather in recent years has caused permafrost to melt, making mining easier. Hence, there are minerals expected to have high commercial value in the future. At the end of 2014, Martin Lidegaard, Denmark's Minister of Foreign Affairs, submitted a claim over the outer continental shelf to the UN, declaring that the Lomonosov Ridge extending from Greenland into the Arctic Ocean belongs to Denmark. This sea area of over 895,000 m² is about twice the size of France and Germany combined, or more than 20 times the size of Denmark.



AMAP Climate Change Update 2019
Source/ ARCTIC MONITORING & ASSESSMENT
PROGRAMME-Publication

The northern territory of Norway crosses over the Arctic Circle, and its territory Svalbard, even further north, also has extremely high commercial value in terms of shipping and minerals. Svalbard was an object of territorial dispute between Norway and Russia at the end of the 19th century. After World War I, Norway was recognized as having sovereignty over the archipelago according to the Treaty concerning the Archipelago of Spitsbergen signed in 1920, which was renamed in 1925. The Treaty stipulates that signatories share the right to economic activity in this region. There are currently 46 state parties. This is the reason why state parties may engage in non-territorial activities within the area of this archipelago, and why it is even more important for Norway to declare its sovereignty.

Iceland is located in the Northern Atlantic and is taken very seriously by major shipping countries around the world due to its special geographic location, which gives it the opportunity to become an important port for Arctic water routes in the future. Iceland's government also intends to secure this status. Eimskip, the oldest shipping company in Iceland, continues to expand its shipping capacity in the Arctic region and the Northern Atlantic. Iceland signed a free trade agreement with China in 2014; it has great importance to China in opening Arctic sea routes. In April 2019, Eimskip and its partner in Greenland, Royal Arctic Line, gained permission from the Icelandic Competition Authority to operate specific routes from Iceland to Greenland. The German port operator Bremenport announced that it will build a large deep water port in Finnaþfjörður in the northeast of Iceland. The port will be used as a transit hub for accessing sea routes north of Russia.

Even though the territory of Finland and Sweden cross over the Arctic Line, they do not have any coastline along the Arctic Ocean. Hence, there are clear particularities to their strategy selection, despite both countries being Arctic Circle nations.

From Finland's perspective, land route connections are one way to secure a place in the development of Arctic sea routes. Oulu, a port city on the west coast of Finland, is a starting point for this strategy. Oulu is the economic and cultural center of Northern Finland, and also its most important industrial and port city. Finland's government is planning to develop the city into an important location for EU products to enter Arctic sea routes. To achieve this purpose, Finland and Norway jointly constructed a cross-border railway from Oulu, passing through Rovaniemi, to Kirkenes, linking the Baltic Sea to the Barent Sea north of Norway. The railway will not only promote tourism, but also more quickly deliver minerals, forestry, and fishery resources to Asian markets, benefiting the economic growth of the northern parts of both countries. This railway project is expected to cost approximately €3 billion and will begin operation around 2035 if the construction commences according to schedule. Finland also reached an agreement with Estonia to build a high speed railway between the two countries under the Baltic Sea; construction is scheduled to be completed in 2024. If these two cross-border transportation development projects are successfully completed, they will complete a channel for delivering goods through Finland that connects Europe to northeast sea routes in the Arctic Ocean. Additionally, Finland has made significant achievements in building icebreakers. In fact, 60% of all icebreakers in the world are either designed or manufactured by Finland, making it the world's main producer of icebreakers.

Perhaps due to the influence of its diplomacy and security policies, Sweden's Arctic policy is mainly neutrality and cooperative. Sweden believes that remaining neutral is not only for its own security, but that it also benefits the stability of Northern Europe. Therefore, Sweden attaches great importance to working together with Finland and other Scandinavian Peninsula and Baltic Sea countries, including cooperating with the Nordic Council of Ministers and the Nordic Council, as well as participation in Nordic defense affairs. Sweden's government is currently implementing a new industrialization strategy under this framework, and aims to change the criteria for becoming a global leader in modern industrial production, particularly focusing on developing the mining sector. As Arctic routes are currently being developed, the production or sales of minerals or technology provision will all affect Sweden's industrial development.

Conclusion

The Arctic Ocean has not attracted the attention of international society due to being covered in ice. However, climate change has greatly increased the possibility of shipping, and resource development and use have greatly raised interest in Arctic Circle nations. Despite Taiwan's great distance from the Arctic, its commercial transportation or environmental and ecological conservation will be closely related to Taiwan's future development. Therefore, Taiwan's attitude towards Arctic affairs should be to monitor developments and seek potential cooperation opportunities.

Analyzing the Operational and Decision-making Mechanisms for IUU Fishing under the IUU Regulation Carding System from the Standpoint of the European Commission

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Translated by Linguitronics

Keywords: EU IUU Regulation, IUU Fishing, European Commission

The European Union (EU) has some of the world's main fishing countries, and is also one of the world's main importers of seafood. Therefore, the EU has exerted every effort for the maintenance and management of fishery resources over the years. The serious risk posed by IUU fishing to the marine ecosystem is already a global issue that no country can escape. That is why the EU believes that all nations should pool their powers together so that the IUU problem can be adequately dealt with. On this basis, the EU passed Regulation No. EC 1005/2008, otherwise known as the IUU Regulation, in 2008 as an active effort to prevent IUU fishing and prevent illegal catch from entering the EU market. The IUU Regulation was formally implemented on January 1, 2010.



Image by Michal Jarmoluk from Pixabay

Illegal, Unreported and Unregulated (IUU) fishing, according to the definition in the 2001 International Plan Of Action to Combat Illegal, Unreported and Unregulated Fishing formulated by the Food and Agriculture Organization (FAO) of the United Nations, refers to fishing that is illegal, unreported, and unregulated.

For non-EU countries, Chapter 6 of the IUU Regulation established a carding system for non-cooperative third countries. If non-EU countries fail to fulfill their duties as flag, port, market, or coastal States, and do not take active action to prevent IUU fishing, the Commission can yellow card the country as a warning, and will give the country a certain period of time to take appropriate action to combat IUU fishing. If the third country fails to actively cooperate with the EU and make improvements within the specified period of time, the Commission can further red card the country and declare it non-cooperating. When a third country is listed as non-cooperative, the EU will ban direct or indirect trade of fish products between the country and the EU, and may also ban EU vessels from working with vessels of the third country, or abolish any fishing agreements between the EU and the third country and prohibit the third country from negotiating any fishing agreements. If the red-carded third country can prove that the situation has been significantly improved, the Commission may delist the third country and also lift any of the bans above. The IUU Regulation is applicable to all fishing vessels, including EU vessels and non-EU vessels, and is also applicable to fish products caught in all sea areas and traded with the EU. The yellow card issued to Taiwan as warning in October 2015 by the European Commission resulted from the above regulations. Taiwan has already (in 2019) had the yellow warning card lifted.

Carding Process

I. Preliminary negotiation phase

A preliminary negotiation begins when the Commission has concerns of whether a non-EU third country is able to effectively enforce international regulations to combat IUU fishing. The Commission understands the specific measures and regulatory system of the third country for combating IUU fishing through negotiations with its government (Article 51 of the IUU Regulation). Third countries are usually flag, port, coastal, or market States related to fish catch traded with the EU. Bilateral discussions usually take several months to several years. During this period, the Commission will collect information from different sources to determine if the third country has fulfilled its duties to international fishing, and will evaluate if the current system of the third country is sufficient to effectively combat IUU fishing. If the third country actively cooperates with the EU in resolving issues and improving its fishing management and control systems during the negotiation process, the Commission may make the decision to not card the country. If not, the next phase will begin.

II. Pre-identification

(I) Yellow card

Based on the information obtained in the previous phase, the Commission shall notify (yellow card) the third country if the Commission believes that the third country may be determined to be non-cooperating. This notice is preliminary and the Commission must give the reason and provide the facts and evidence that were taken into consideration. The third country must be given an opportunity to respond, and will be notified of the possible consequences if it is listed as non-cooperating. (Article 32 of the IUU Regulation)

(II) Evaluation and Reform

After the Commission issues a yellow card, it will usually give the third country at least 6 months for review and rectification. If the third country takes action for reform in response to the deficiencies addressed by the EU within a certain period of time and proposes concrete action plans, the Commission may decide to lift the yellow card and issue a green card. However, if the third country fails to actively rectify the situation, the next phase will begin.

III. Notifying non-cooperating third countries

(I) Phase 1 (red card)

The Commission may determine the third country to be non-cooperating according to the standard set forth in Article 31 of the IUU Regulation (please refer to the determination standard below), and issue a red card. After a red card is issued, fish products with the country's catch certificate will not be able to enter the EU's market.

(II) Phase 2 (formal listing as non-cooperating third country)

After the Commission issues a red card, according to Article 33, the Council, acting by qualified majority on a proposal from the Commission, shall decide on a list of non-cooperating third countries. After the Council approves the list, the Commission shall notify the third country of its listing as a non-cooperating third country, and implement a series of bans according to Article 38. Furthermore, the Commission shall also require the third country to respond within a certain period of time and take action to comply with resource maintenance and management measures.

IV. De-listing

According to Article 34 of the IUU Regulation, the Council, acting by qualified majority on a proposal from the Commission, shall remove a third country from the list of non-cooperating third countries if the third country concerned demonstrates that the situation that warranted its listing has been rectified.

Determination standard

I. Severity of IUU fishing activity

The Commission shall take into account the measures taken by the country against fishing vessels that engage in IUU fishing and trade of fish products from IUU fishing. Pursuant to Article 31(4) of the IUU Regulation, when determining if it is a non-cooperating third country, the Commission shall primarily rely on the examination of measures taken by the third country concerned with respect to:

- (I) recurrent IUU fishing carried out or supported by fishing vessels flying its flag or by its nationals; or that carried out by fishing vessels operating in its maritime waters or using its ports.
- (II) access of fishery products stemming from IUU fishing to its market.

II. EU Regulation and Cooperation

Whether or not the third country fails to take action to cooperate with the EU or Commission or enforce IUU fishing regulations is also a key point of inspection. Pursuant to Article 31(5) of the IUU Regulation, the Commission shall take into account the following four points:

- (I) whether the third country concerned effectively cooperates with the EU, by providing a response to requests made by the Commission to investigate, provide feedback or follow-up to IUU fishing and associated activities.
- (II) whether the third country concerned has taken effective enforcement measures with respect to the operators responsible for IUU fishing, and in particular whether sanctions of sufficient severity to deprive the offenders of the benefits accruing from IUU fishing have been applied.
- (III) the nature, history, circumstances, extent and gravity of the manifestations of IUU fishing considered.
- (IV) for developing countries, the existing capacity of their competent authorities.

III. Considerations related to international fishery regulations

Enforcing international fishery regulations is also a focus on the Commission, and according to Article 31(6) of the IUU Regulation, the Commission shall also consider the following three points:

- (I) the ratification of, or accession of the third countries concerned to, international fisheries regulations, in particular the UNCLOS, the UN Fish Stocks Agreement and the FAO Compliance Agreement.
- (II) the status of the third country concerned as a contracting party to Regional Fisheries Management Organizations (RFMOs) or its agreement to apply the conservation and management measures adopted by RFMOs.
- (III) any act or omission by the third country concerned that may have diminished the effectiveness of applicable laws, regulations or international conservation and management measures.

Inspection Items and Concrete Action

Deficiencies of third countries, which are being investigated or were yellow or red carded, that are most easily criticized by the EU can be divided into five categories: The country's legal framework, the duty of flag States to control the activity of their fishing vessels, implementation of maintenance and management measures of coastal States, regional or multilateral fisheries cooperation, and the market State's measures and traceability, as described below:

I. Legal framework

The EU requires third countries to ensure their legal framework has comprehensively considered how to prevent, deter, and eliminate IUU fishing. To achieve this purpose, the legal framework of a country must fulfill its duty as a flag, port, coastal or market State under international or regional fishery regulations. Therefore, countries must give consideration to the provisions in the UNCLOS, the UN Fish Stocks Agreement and the FAO Compliance Agreement, and comply with the decisions and recommendations made by RFMOs. Countries may also refer to measures voluntarily implemented by other countries to establish a complete and effective legal framework to effectively combat IUU fishing.

II. Responsibilities of the flag State

The EU requires third countries to fulfill their duty as flag States, and control and manage fishing vessels that fly their flag in accordance with the UNCLOS and UN Fish Stocks Agreement. The FAO Compliance Agreement provides different measures to help flag States fulfill their duties. On this basis, measures that may be taken by the flag State include: Vessel registration, fishing activity authorization plan, and monitoring, control, and supervision (MCS) measures.

III. Coastal State maintenance and management measures

The EU referenced the UNCLOS and requires coastal States to establish maintenance and management measures and mechanisms in their exclusive economic zone, and ensure that fishing vessels of other countries also comply with the maintenance and management measures in the coastal State's exclusive economic zone. Measures that may be taken by the coastal State include: Cooperate and exchange information with other countries or RFMOs, establish an effective MCS (Monitoring, Control and Surveillance) system, and control maritime transfers.

VI. Regional and multilateral fisheries cooperation

The UN Fish Stock Agreement requires countries to jointly manage and maintain highly migratory fish stock. Fishing States and coastal States are all required to join or cooperate with RFMOs and comply with maintenance and management measures. Flag States of vessels that catch highly migratory fish stock or fish within the waters of RFMOs shall ensure their compliance with maintenance and management measures of RFMOs, and actively investigate or punish IUU fishing activity. Both port States and fishing States are required to exchange information and monitor fishing vessels to combat IUU fishing. Therefore, the EU takes the relationship with RFMOs or other international fisheries organizations into consideration during evaluation to determine if RFMO requirements are met.

V. Market State Measures and Product Traceability

The EU IUU Regulation not only establishes a carding system for non-cooperating third parties, but also established a catch certificate scheme, in which it requires flag States to authenticate their catch certificate issued for the vessel making the catch if intending to export the fish products to the EU. Fish products must have a catch certificate that complies with EU regulations before entering the EU. Furthermore, when catch is processed and enters the EU as the product of a third country, the processing country must provide the time the catch was imported to authenticate the catch certificate and origin. Starting in January 2010, catch certificates for catch that is directly imported and imported products processed by a third country must be submitted to the EU for review before entering the EU market.

Conclusion

As the sustainable development of fisheries has attracted the attention of the international community, in addition to establishing international fishing agreements and concrete action plans, countries are beginning to incorporate it into their domestic laws. The EU IUU Regulation is the best example. Since the IUU Regulation was implemented in 2010, the EU has begun negotiations with over 20 countries, most red (yellow) carded countries have reformed their legal system and established an effective plan for combating IUU fishing with the assistance of the EU, so as to comply with international law on fisheries and have had their red (yellow) card lifted. The prominent results may serve as an example from which Taiwan can learn.

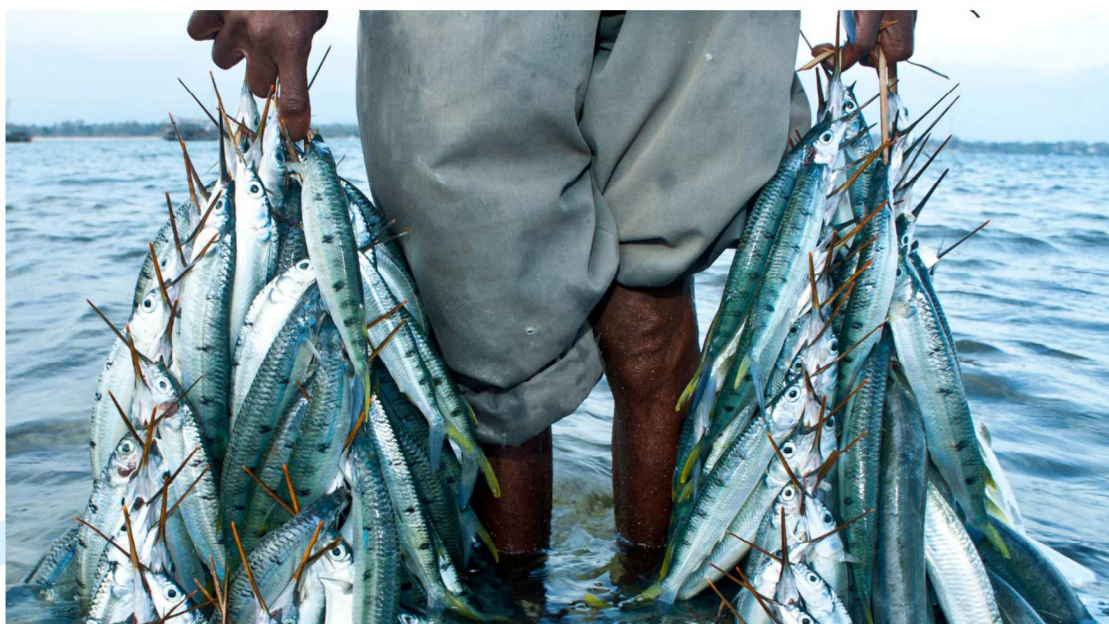


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Introduction to the EU Blue Economy Report 2019

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Translated by Linguitronics

Keywords: Blue Economy, Marine Industry, Sustainable Development

Disclosures in the EU Blue Economy Report 2019 will bring even more development opportunities for existing coastal travel and shipbuilding fields, as well as newly emerging ocean energy and blue bio-economy fields. Furthermore, Blue Economy has attracted the participation of many startups and small and medium enterprises (SMEs).



Source / <https://publications.europa.eu/en/publication-detail/-/publication/676bbd4a-7dd9-11e9-9f05-01aa75ed71a1/language-en/>

Introduction

Humanity in the 21st century faces the crises of population explosion, resource shortage, environmental pollution, and climate change. The ocean has an abundance of natural resources with unlimited development potential. Yet, giving consideration to environmental protection and resource sustainability is of utmost importance while pursuing industrial development. The United Nations Conference on Sustainable Development mentioned Blue Economy as a future goal for ocean management in “The Challenges for Rio+20” in September 2011, and emphasized the harmony and symbiosis between human activity and the ocean, as well as the sustainability of marine industries. The European Commission passed the Blue Growth development strategy in 2012, and further proposed Innovation in the Blue Economy in 2014. The European Commission promotes the sustainable use of ocean resources, economic growth, social inclusion, improvement of livelihood and employment, and strategies to ensure a healthy marine ecosystem based on the concept of Blue Economy. It is hoped to drive Europe's economic growth, create employment opportunities, and increase overall economic output value through Blue Economy. The European Commission views this as a marine and maritime sustainable growth opportunity, and plans to create 7 million employment opportunities and annual economic output value of about €600 billion by 2030.

Introduction to the EU Blue Economy Report

After the EU released "The 2018 annual economic report on the EU blue economy" in July 2018, it subsequently released the "Blue Economy Report 2019" on May 16, 2019. The report divides Blue Economy into coastal travel, marine biological resources, marine non-biological resources (oil and natural gas), port activity, shipbuilding and ship repair, and shipping industries. In 2012, the EU's overall Blue Economy provided 3.51 million employment opportunities and had an economic output value of €170 billion. In 2017, the EU's overall Blue Economy provided 4.03 million employment opportunities and had an economic output value of €179.7 billion, accounting for 1.8% of the employed population and 1.3% of the overall economic output value of the EU, an increase of over 510,000 employees and €9.7 billion in economic output value compared with 2012. The report is divided into eight chapters; key points of each chapter are summarized below:

I. Chapter 1 introduces the Blue Economy and the objective of the report. It also mentions the inclusion of blue energy and blue bio-economy in the report, and provides related data in hopes of encouraging continued data collection, evaluation and analysis of emerging sectors.

II. Chapter 2 provides an overview of Blue Economy development in the EU, including overall employment, economic output value, and investment activity, as well as the development of Blue Economy in 6 sectors between 2009 and 2017.

III. Chapter 3 explains the development status and trends in sub-sectors under the six sectors of Blue Economy. In the case of coastal travel, which has the highest output value, the sector is divided into accommodations, transportation, and other expenditures, in which accommodations has the highest output value at €32.6 billion and employs 990,000 people. Strategic actions in the sub-sector focus on reducing the impact of climate change on the environment.

IV. Chapter 4 describes emerging sectors of Blue Economy, including blue energy, blue bio-economy, ocean minerals, desalination, and navy, in which blue energy is divided into offshore wind power and ocean energy. As of the end of 2018, offshore wind power in the EU was able to provide 18.5 GW and supply about 10 million households. If offshore wind power generation is broken down by country, the UK accounts for 44%, Germany 32%, Denmark 7%, Belgium 6.4%, and the Netherlands 6%.

V. Chapter 5 describes natural capital and ecosystem services. Blue Economy does not only focus on Sustainable Development Goal 14 Life Below Water, but also believes that all SDGs are related to Blue Economy. Hence, the development of Blue Economy has a positive effect on the development of the overall socioeconomic system. Furthermore, this chapter also mentions the protection of coastal areas, as well as the impact of ocean waste on the development of Blue Economy. Based on the disclosures in the report, ocean waste will cause marine fisheries to sustain €162 million in damages each year, aquaculture €2 million, and coastal travel €350 million.

VI. Chapter 6 uses five examples to discuss Blue Economy practices, such as the synergistic effects of Meyer Werft from developing Blue Economy; how Copernicus marine environment monitoring supports the monitoring and measurement of Blue Economy; how marine protected areas use CBAs and monitoring and measurement methods; the contribution and influence of marine research, education, and Blue Economy in Brest, France, to local communities; specific projects of the European Investment Bank to support existing investments and emerging fields of Blue Economy.

VII. Chapter 7 summarizes socioeconomic data of the EU, and breaks down the data into Atlantic Ocean, Arctic Ocean, Baltic Sea, and Mediterranean Sea, providing Blue Economy analysis for each region.

VIII. Chapter 8 describes the current status of Blue Economy development and economic data for each sector in each of the 28 EU member states.

Conclusion

Oceans cover about 70.8% of the Earth's surface. Marine and coastal ecosystems provide considerable economic and environmental services, as well as abundant natural resources for human beings. The Blue Economy Report shows that the EU is not only concerned about developments in conventional biological resources (such as fisheries, aquaculture, and processing), but has taken on a broader perspective and established emerging and innovative sectors to provide important sources of economic development, especially in coastal communities. A sustainable Blue Economy relies on healthy oceans and methods that ensure economic productivity, so that society can obtain economic value from the ocean and coastal areas and achieve sustainable development.



Image by Pride Advertising Agency Ltd.

The Overview of the Floating Offshore Wind Power: Technological Development and Industrial Trend

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Translated by Fang-Yu Tsao (Assistant Research Fellow, Taiwan Institute of Economic Research)

Keywords: Offshore Wind Power, Renewable Energy, Environmental Impact Assessment

More and more countries start to evaluate the potential to develop floating offshore wind turbines in the deep sea not only because global pressure on decarbonation and the reduce of fuel energy remain to increase, but also the limited wind resource off the coast have been nearly depleted.

Main Technological Type

The technology of the offshore wind power is applicable to the deep sea and far the coast. However, the technique has not yet matured so that there are not many cases in the world. According the Carbon Trust (2015), nowadays the foundations of the floating offshore wind farms have three primary types; spar buoy, semi-submersible and tension leg platform (as below figure shown).



The primary foundation types of floating offshore wind farms worldwide

Source/ The Carbon Trust (2015), Floating Offshore Wind: Market and Technology Review, Prepared for the Scottish Government.

International Market Overview

The emerging markets like the US and Japan have big developing potential because of much wind sources existing in the 50-to-200-meter-deep sea. Therefore, it is expected that the technique of floating offshore wind power will be widely used in these markets the future. Moreover, in the Europe, Scotland, France, Portugal and other Mediterranean countries are regarded as the important and potential markets in recent years as below table shown.

Table/ The potential capacity of floating wind farms in the world

Country / Region	Ratio of offshore wind resources located in deep waters (water depth greater than 60 m)	Potential capacity of offshore wind power
Europe	80%	4,000GW
USA	60%	2,450GW
Japan	80%	500GW

Source/ The Carbon Trust (2015), Floating Offshore Wind: Market and Technology Review, Prepared for the Scottish Government.

In the future, the limited wind sources in the water off the coast will be gradually depleted. The pressures on the decarbonation and energy have increased. It is supposed that more and more countries start evaluating the feasibility of development. Hence, the growing potential of floating offshore wind farms is still significant.

Industrial Trend

The industry of the offshore wind power in Europe is in the leading position. Even for the innovative floating technique, the share of design concept contains two-third in the world. However, regarding the countries, in recent years, Japan who is aggressive to do the research and develop has most design concepts, following by the US.

According to the practical cases, the first commercial-scale floating offshore wind farm, Hywind Scotland, has already been established in October 2017, and as offshoreWIND.biz reported, its developer is Norwegian energy company, Equinor, cooperative partner is Masdar. There are five 6MW turbines, and the total capacity is 30MW. This is a milestone for the floating offshore wind power from test stage to commercial application.

Conclusion

Although the developing potential of floating offshore wind farms has attracted the many investors, only a few companies are able to persuade private equity to invest because the related technologies and economic benefits still need to be improved. Based on the prediction by the 2018 Policy Position papers from the European Wind Energy Association, the technology of the floating offshore wind power is supposed to become mature, and the projects supported by the global energy giants will have better market opportunities in the future. e projects supported by the global energy giants will have better market opportunities in the future.

Overview of Directorate-General for Maritime Affairs and Fisheries of the European Commission

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Translated by Linguitronics

Keywords: European Commission, Directorate-General for Maritime Affairs and Fisheries

The European Commission is the typical authority representing the interests of the European Union. This article briefly introduces the organization of the European Commission and the tasks performed by the Directorate-General for Maritime Affairs and Fisheries (DG MARE) for the reference of the people.



Image by Capri23auto from Pixabay

The European Union of today is an international organization equivalent to an international legal person. It was formerly known as the European Economic Community formed by the six countries, namely, Germany, France, Italy, the Netherlands, Belgium, and Luxembourg, according to the concluded treaty (Treaty of Rome) in 1957. The name was changed to the European Community according to the Maastricht Treaty in 1992. Eventually, the name was again changed to the European Union according to the Lisbon Treaty in 2009 and the number of member states expanded to 28. The jurisdiction of an international organization and the number of organs set up underneath it as well as the scope of power of each body are determined by the member states according to the established and amended treaty that has been concluded.

EU Organs

The organs of an international organization usually include those that represent the interests of its member states. As far as the United Nations is concerned, for example, the United Nations Secretariat is such an organ. In addition, there are organs representing the interests of the international organization, such as the Secretary General in the case of the United Nations. A more complete international organization will also set up an organ to settle its own disputes. An example is the International Court of Justice of the United Nations. As far as the European Union is concerned, the organ representing the interests of its member states is the Council of the European Union. The organ representing the interests of the European Union is the European Commission. That organ settling disputes, on the other hand, is the Court of Justice of the European Union. An organ like the European Parliament with representatives elected directly among the citizens of the European Union to represent the interests of its citizens, however, is relatively rare.

European Commission

As the organ representing the interests of the European Union, the European Commission is the most typical organ in Europe. The powers it is assigned include: The legislative power (the power to propose laws) of the European Union, the power of government, and most administrative power, the right to negotiate in concluding external treaties, and the right to internal litigation against member states in order to safeguard the interests of, and protect the treaties concluded by, the European Union. According to the idea in 1950 when the European Commission was first established, the European Commission is an independent engine, protector, and honest broker of the European Union. Under the perspective of European federalism, the European Commission is to gradually grow and become the European government. The enormous administrative power and the administrative organization make the duties and functions of the Commission very much like those of the government and administrative agencies of a country. Someone gaining control over the European Commission is like controlling the central government of the European Union. Therefore, how the positions are assigned in the Commission is the battlefield for respective member states and also where resources are distributed and competed for.

According to Article 17, Paragraphs 4 and 5 of the Treaties of the European Union, the Commission will have the identical number of members according to the actual number of member states that are available. This also includes the chairperson of the Commission and the senior representative of diplomacy safety policy. Each member state is entitled to one seat in the Commission and will be in charge of a certain professional department (professional members are like ministers in the central government; each state is entitled to one position). As the number of member states of the European Union expands to 28, the Commission becomes overcrowded, and is relatively less efficient. According to Article 17, Paragraph 5 of the Treaties of the European Union and Article 244 of the Treaty on the Functioning of the European Union, the number of members of the Commission would be reduced starting from November 1, 2014. The number, as required, would be reduced to two-thirds the number of member states. In order to Make the Commission's task force an efficient unit. No member state, however, is willing to give up the one and only seat it is entitled to. As such, the treaty formulator specified in Article 17, Paragraph 5 of the Treaties of the European Union a method by which the current number of members could be maintained.

Organization of the European Commission

At the top of the Commission is the President. The President is the political leader of the Commission. He/she owns the utmost internal organizational power and leads members of the Commission so that they can carry out tasks assigned to them. The President of the Commission is elected upon approval by the European Parliament based on the recommendations provided by the European Council. Other members of the Commission are to be approved by the President elect according to the lists provided by respective member states and finalized according to majority decision of the European Council before they are nominated and assigned accordingly (in other words, each member state, with mutual respect, assigns one of its high-ranking political figures independently). Prior to nominations by the European Council, all organs of the Commission need to have affirmative votes from the European Parliament.

Commissioner for Environment, Maritime Affairs and Fisheries

Except for the President and the Vice Presidents (five at present), each of the remaining members serves as commissioner to take charge of the respective policy field they specialize in. There is one Commissioner for Environment, Maritime Affairs and Fisheries of the European Commission at the moment. The responsible commissioner is like a comprehensive minister who takes charge of the Environmental Protection Administration, the Ocean Affairs Council, and the Fisheries Agency. This specialized policy field was not separated from that of agriculture, land development, and fisheries until 2004, when the European Union expanded eastward. In the beginning, just after it was separated, its name was “maritime affairs and fisheries.” It was not until 2014, when Jean-Claude Juncker served as President, that “environment” was included as part of the specialized field. Since November 2014, the Commissioner for Environment, Maritime Affairs and Fisheries has been Karmenu Vella. He is like the minister (an administrative officer) politically responsible for the said specialized policy field.

Directorate-General of the Commission

A directorate-general is the administrative unit subordinate to the Commission. Each directorate-general is in charge of a specific professional policy field. Directorate-generals form the core of the administrative affairs authority of the European Commission. Therefore, they function similarly to ministries at the country level (such as the Ministry of Economic Affairs and the Environmental Protection Administration of a country). Directorate-generals prepare for tasks assigned by the Commission. Administrative officers politically responsible are commissioners. In other words, for the officers, the top of a directorate-general is the Director-General. A director-general is the supervisor of highest-ranking officials (administrative civil servants) in the European Union and is equivalent to the standing deputy minister of a ministry in a country. The minister (commissioner) is a member of the Commission but the director-general is the highest-ranking civil servant (which is equivalent to a senior executive officer of the 14th ranking in the Administrative Deputy Minister of Economic Affairs in Taiwan). The Director-General is responsible for the daily affairs of each of the specialized departments and is mostly under the leadership of the commissioner politically.

The Directorate-General for Maritime Affairs and Fisheries (MARE), for example, is subject to the leadership of Karmenu Vella, the Commissioner for Environment, Maritime Affairs and Fisheries and the leader of the Directorate-General is Director-General João Aguiar Machado. In principle, the commissioner and the director-general may not be from the same member state; this is in order to prevent interference from said member state. Therefore, the director-general has to be transferred once every two to five years.

The Directorate-General is divided into directorates and each directorate into units. Before 1999, all directorate-generals were indicated in numbers. Since the structural reform in the year, directorate-generals have been named after the jurisdiction. (For example, the Directorate-General in charge of fisheries was Directorate-General 14; now it is the Directorate-General for Maritime Affairs and Fisheries (MARE). Directorates are mostly indicated in alphabetic characters (ABC...) while units are indicated in numbers. The Directorate-General for Maritime Affairs and Fisheries, for example, is divided into five directorates:

Directorate A: Maritime Policy and Blue Economy

Directorate B: International Ocean Governance and Sustainable Fisheries

Directorate C: Fisheries Policy Atlantic, North Sea, Baltic and Outermost Regions

Directorate D: Fisheries Policy Mediterranean and Black Sea

Directorate E: General Affairs and Resources

Unit 1 under Directorate A for Maritime Innovation, Marine Acknowledge and Investment is identified as A1 (Unit A1) and Unit 2 under Directorate A for Blue Economy Sectors, Aquaculture and Maritime Spatial Planning is identified as A2 (Unit A2).

Main Tasks of Directorate-General for Maritime Affairs and Fisheries

The Directorate-General for Maritime Affairs and Fisheries of the European Union leads the development and implementation of integrated maritime policies at the regional level and the European level with close collaboration among the representative stakeholders. Meanwhile, it promotes common fishery policies in waters within and outside the jurisdiction of the European Union under sustainable development of maritime activities and sustainable management and survival of fish.



Image by Pride Advertising Agency Ltd.

International Development Trends in Wave Energy Generation

Chun-Han Ko (Postdoctoral Researcher at the Department of Civil Engineering, National Chung Hsing University)

Translated by Linguitronics

Keywords: Renewable Energy, Breakwater Integrated Wave Energy Converter

Technically, it is not a challenge to harvest the wave power and transit it into electrical power. There have several outstanding devices been constructed in Europe, especially the breakwater-integrated wave energy converter. Taiwan is surrounding abundant wave energy resources. After the invention of the converter, which is able to endure the impact of typhoon waves, what we have to consider is not whether we should develop the wave power; but is how to develop it.

Oceans cover about 70% of the Earth's surface and contain an abundance of natural resources. In which the potential wave energy is about 29,500 TWh each year (IEA-OES, 2011), and it more than global power consumption in 2017 (25,606 TWh, IEA, 2019). When we mention renewable energy, wind power and solar power are usually what come to people's mind. These sources of renewable energy have flourished under the policies of governments around the world, their objective being to reduce carbon emissions and lower dependence on fossil fuels. Wind power and solar power have rapidly developed over the past few years, but another reliable source of renewable energy with development potential will be needed as the population continues to grow. The European Wave and Tidal Energy Conference (EWTEC) held in Napoli, Italy in September this year brought together experts and scholars from around the world. It was mentioned during the conference that wave energy has great future potential for large scale development. As countries around the world are trying hard to develop emerging renewable energies, should we not also consider developing wave energy generation in Taiwan, an island country?

Introduction to Wave Energy Converters

Before considering the development of wave energy generation in Taiwan, we must first understand the types and mechanisms of wave energy converters. Wave energy converters are categorized in oscillating water column (OWC), pressure differential, floating structure, overtopping, and oscillating wave surge. Despite the many wave energy converters that have been invented, very few have been used for commercial operation.

The development of OWC devices is already quite mature. Its structure is simple and easily integrated and used in various designs, which is why it is recommended by many experts and scholars. Typical OWC devices have a chamber that is partially submerged in water (Figure 1). The lower part of the front wall has an opening that allows water to enter the chamber. When the wave propagates into the chamber, the water column will oscillate periodically. This mechanism compresses and decompresses the air in the upper part of the chamber and induce the airflow to drive the turbine. Then will drive the power generator to generate electricity.

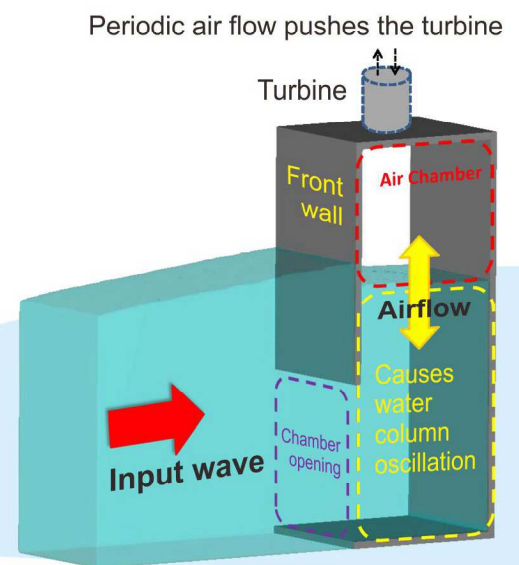


Figure 1/ OWC device
Sketched by Chun-Han Ko

International Development Trends in Wave Energy Generation

The breakwater-integrated OWC wave energy converter is characterized by low construction cost (can be shared with the cost of the breakwater), is easy to repair (does not involve offshore operations) and easy to maintain (does not have any underwater machinery that needs to be maintained). As such, it has been widely adopted by European countries. For example, Italy has applied breakwater-integrated OWC wave energy converters in its port facilities, and currently has three full-scale wave energy converters. Of which, the converter REWEC3 is a representative breakwater-integrated OWC converter well-known around the world. Construction of the device began at Civitavecchia Port near Rome, Italy, in 2014 (Figure 2). Furthermore, REWEC3 is integrated in the extended section of the breakwater at the Port of Salerno in Italy (Figure 3). Besides developing wave energy converters, Italian experts and scholars have also developed energy generation equipment, such as using DEG to replace turbines (Figure 4), showing Italy's determination to develop wave energy generation.



Figure 2/ Construction of REWEC3 at Civitavecchia Port in Italy
Source/ <http://www.duomi.it/>

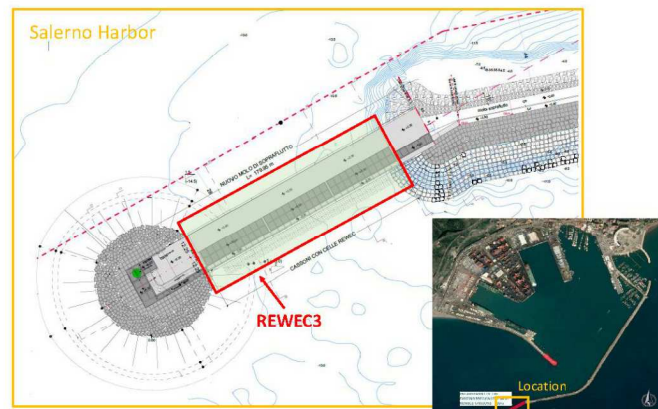


Figure 3/ Construction of the wave energy converter at the Port of Salerno in Italy
Source/ Arena et al., 2019



Figure 4/ Experiment using DEG in the breakwater-integrated OWC wave energy converter
Source/ Moretti et al. 2020

Aside from Italy, the breakwater-integrated wave energy converter at the Port of Mutriku in Spain is also worth mentioning (Figure 5). When the device was completed in 2009 it became the world's first breakwater-integrated wave energy generation system to begin commercial operation. It has 16 Wells turbines that can generate a total of 296 kW. As of 2011, it stably provides electricity to 5,000 residents that live near the port and is a good example for Taiwan to learn from.



Figure 5/ Wave energy converter at the Port of Mutriku in Spain
Source/ <https://www.emodnet-humanactivities.eu/>

Aside from European countries, the Korea Research Institute of Ships and Ocean Engineering (KRISO) is also developing a breakwater-integrated wave energy converter suitable for islands. A key research project on the device was implemented in 2016, and the construction of a demonstration converter is expected to begin on Chuja Island, Jeju City, South Korea in 2021 (Park et al. 2019).

Taiwan's advantages

Taiwan is surrounded by sea. This is what almost every citizen says when introducing Taiwan's geographic environment. Taiwan currently has 7 international commercial ports and 2 industrial ports, as well as countless fishing ports. Offshore breakwaters are needed to create tranquil waters in ports, whether they are expanded, renovated, or when exclusive ports (such as natural gas receiving stations, LNG exclusive wharfs, etc.) are constructed following economic development. If wave energy converters can be integrated during the design and construction of breakwaters, then breakwaters will not only provide a shield against the waves, but also be able to generate electricity, giving it multiple functions by combining it with green energy development concepts. Waters on the west coast of Italy are more gentle, with average wave energy at about 5-10 kW/m, which is far lower than waves in Taiwan. The average wave energy at the Port of Taichung is about 19.7 kW/m, even reaching 37.4 kW/m during winter. This shows that Taiwan has an excellent advantage in terms of wave energy potential.

Whether it may be in the EWTEC this year or in literature or reports, wave energy generation technologies are becoming more mature. Governments around the world should make suitable adjustments to the power generator design based on their own natural environment, and complete demonstration sites and generators as soon as possible to strengthen market confidence. This will accelerate the transition of wave energy generation to commercial operation, and avoid a gap in the growth of renewable energy when wind power and solar power encounter bottlenecks in the future. Based on the above, the following recommendations are provided as reference:

I. Wave power potential survey:

In the past, Taiwan's evaluations of wave energy potential mainly focused on offshore energy, but coastal areas are the final destination of waves, and finding hot spots where waves are gathered will greatly aid the development of wave energy plants.

II. Developing key technologies that are most suitable for Taiwan's wave energy generation:

Taiwan has high wave energy potential, and it is not hard to gather wave energy and efficiently transform it into electricity technically. However, Taiwan encounters 3.5 to 4 typhoons a year, so developing a wave energy converter suitable for Taiwan means having mechanisms to resist the impact of storm waves for it to be beneficial. The research team led by Professor Tsai Ching-Piao at National Chung Hsing University has developed a new wave energy converter suitable for Taiwan (Tsai et al., 2018), and may be able to serve as a reference. The special structural design is able to increase the wave energy captured and wave energy conversion efficiency under typical wave conditions during the monsoon season. When a typhoon strikes, it can reduce wave energy to enhance the device's safety. Preliminary research findings show that the device can generate an average of 35 kW/m when it is located at a wave hot spot. This is a considerable amount, as 1 km of breakwater can generate the installed capacity of the Taichung Wind Farm (36 MW).

Conclusion

Wave energy generation has attracted attention because it is renewable and predictable. Additionally, most development sites are located near densely populated areas (90% of the world's population is within 90 km of coasts). These are the reasons why wave energy has been called the most worth of developing renewable energy in recent years. Taiwan has an abundance of wave energy, and the question is no longer whether or not we should develop wave energy, but rather how can we develop wave energy?

EU Marine Strategy Framework Directive: Achieving Clean, Healthy and Productive European Seas

Chung-Ling Chen (Professor, Institute of Ocean Technology and Marine Affairs,
National Cheng Kung University)

Keywords: EU, Marine Strategy Framework Directive, Good Environmental Status

The Marine Strategy Framework Directive (Hereafter, Marine Directive) was adopted on 17 June 2008 and was due to be transposed into national legislation by 15 July 2010. The overarching goal of the Marine Strategy is to achieve clean, healthy and productive Europeans seas, and specifically to achieve Good Environmental Status (hereafter, GES) of the EU's marine waters by 2020.



A tourist beach located in Alacant, Spain, boarding the Mediterranean Sea
Image by Chung-Ling Chen

The origin of the Marine Directive

The total maritime area under the Jurisdiction of EU Members States is larger than the total EU land area. The European coastline totals 68,000 km. Five of 28 Member States do not have coastlines: Hungary, the Czech Republic, Slovakia, Luxembourg and Austria. Almost half of Europe's population lives within 50 km of the sea. Many human activities depend on the seas and it is expected that competition for marine resources will be increasing. Unsustainable use of marine resources will threaten the fragile balance of marine ecosystems, such as land-based pollution from urban areas, growing levels of shipping, dredging, marine litter, overfishing and offshore energy production (e.g., drilling for oil and gas and wind farms). In addition, it was found that 88% of Europe's fish stocks are being fished beyond their maximum sustainable yield and 30% are being fished beyond safe biological levels; Bluefin tunas are on the verge of a stock collapse in the Atlantic and Mediterranean due to overfishing and illegal fishing; more than 132,000 sea turtles are caught annually in the Mediterranean as a by-catch of fishing; 44,000 of these die accidentally. These problems push the EU to adopt the Marine Strategy in order to protect more effectively the marine environment across Europe. It is the first EU legislative instrument related to the protection of marine biodiversity and provides a long-term policy vision for Europe's marine environment.

Main elements of the Marine Directive

I. Three key concepts: protected, sustainable and common

The Marine Directive establishes an integrated, adaptive and ecosystem-based approach to the management of all human activities that have an impact on the marine environment. It also integrates the concepts of environmental protection and sustainable use. Illustratively, the Marine Directive builds on three key concepts: protected, sustainable and common. 'Protected' means protecting the resources on which marine-related economic and social activities depend. 'Sustainable use' refers to using an ecosystem-based approach to the management of human activities and ensuring that the collective pressure of human activities does not adversely affect ecosystems and that they are contained within sustainable levels. In order to fulfill this concept, it is a must to manage competing uses in an integrated way using tools like integrated coastal zone management and marine spatial planning. 'Common' means Member States develop common approaches to achieve GES by 2020. This requires cooperation and coordination among Member States and several working groups and their associated technical working groups have therefore been established, serving as a platform for mutual discussion of common approaches. In addition, based on geographic and environmental characteristics, Europe's waters are divided into four marine regions: the Baltic Sea, the North-east Atlantic Ocean, the Mediterranean Sea and the Black Sea. Member States of one marine region cooperate to develop a common timeline and GES as well as practical and appropriate marine strategies using existing regional cooperation structures. Each Member State is also required to develop its own Marine Strategy for its marine waters.



Yachts mooring at Barcelona, Spain
Image by Chung-Ling Chen

II. GES: the goal achieved by 2020

GES is defined as 'the environmental status of marine waters where these provide ecologically diverse, and dynamic oceans and seas which are clean, healthy and productive'. Moreover, to help Members States interpret what GES means in practice, the Marine Strategy sets out eleven descriptors, which describe what the environment will look like when GES has been achieved. They are: 1) biodiversity is maintained, 2) non-indigenous species do not adversely alter the ecosystem, 3) the populations of commercial fish species are healthy, 4) elements of food webs ensure long-term abundance and reproduction, 5) eutrophication is minimized, 6) sea floor integrity ensures the functioning of the ecosystem, 7) permanent alternation of hydrological conditions does not adversely affect the ecosystem, 8) concentrations of contaminants have no effects, 9) contaminants in seafood are within safe levels, 10) marine litter does not cause harm, 11) introduction of energy (including underwater noise) does not adversely affect the ecosystem.

Since the descriptors are qualitative, the European Commission produced a set of detailed criteria and methodological standards which help make the descriptors more concrete and quantifiable, facilitating the implementation of the Marine Strategy by Member States. Based on the quantifiable criteria, Member States set a target, representing GES, to be achieved by 2020. For instance, Descriptor 3 - the population of commercial fish species is healthy - is assessed using the criteria and indicators as follows:

Criterion 1: The level of pressure of fishing activity

- Indicator: fish mortality

Criterion 2: The reproductive capacity of the stock

- Indicator: spawning stock biomass

Criterion 3: The population age and size distribution

- Indicator: high proportion of old, large individuals

The criteria and indicators associated with Descriptor 10 - marine litter does not cause harm are as follows:

Criterion 1: Characteristics of litter in the marine and coastal environment

- Indicators: trends in the amount of litter washed ashore and/deposited on coastlines; trends in the amount of litter in the water column (including floating at the surface) and deposited on the sea-floor; trends in the amount, distribution and composition of micro-particles (in particular micro-plastics)

Criterion 2: Impacts of litter on marine life

- Indicator: trends in the amount and composition of litter ingested by marine animals

Management cycle of the Marine Strategy

The Marine Strategy is not a one-time exercise. Each Member State must review marine strategies every six years. This adaptive management approach ensures that Cycle 2 strategies take on board lessons learnt from Cycle 1 and are based on the latest information and changing conditions. The main elements of Cycle 1 are presented as follows:

I. Initial assessment of current environmental status of waters and the environmental impact of human activities and socio-economic analysis (by 15 July 2012)

II. Determination of GES (by 15 July 2012)

III. Establishment of a monitoring programme (by 15 July 2014)

IV. Development of a programme of measures designed to achieve or maintain GES (by 2015)

V. Review and preparation of the second cycle (2018-2021).

Conclusion

The Marine Strategy embodies the EU's ambition to achieve sustainable marine environments. EU views the seas as an asset with economic potentials. It argues that only by means of sustainably using as well as protecting marine resources, the development of economic activities depending on marine environments gets to be sustained. The Marine Strategy and other existing EU legislation and policies, including the Water Framework Directive, the Habitats and Birds Directives, the Common Fisheries Policy, the Recommendation on Integrated Coastal Zone Management, collectively establish a management framework of EU's marine environments. On an international level, the Marine Strategy responds to the EU's international obligations as set out in the Convention on Biodiversity and the United Nations Convention on the Law of the Sea.

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