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Conflicts between Fisheries and Offshore Wind Power in Taiwan: Legal and Administrative Prospects

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Abstract: Offshore wind power (OWP) has become a new emerging favorable renewable energy in Taiwan. Despite the fact that its development in Taiwan seems promising in the near future, it is facing some unwanted challenges recently, particularly the protests from fishers. The purpose of this paper is to understand jurisdiction over offshore areas in Taiwan via analyzing conflicts between OWP developers and fishers in Taiwan and finds that existing jurisdiction over the offshore areas in Taiwan seems to be not supportive to the development OWP. Jurisdiction among different acts is not consistent, and it is not administered by a specific agency. Most importantly, the Fisheries Act allows some specific people or groups to enjoy fishing rights as their property in rem in Taiwan's offshore areas. To this end, the revision of the current Fisheries Act to set such rights as a privilege should be a must, but the government will need to pay a vast amount of money for doing so. Further, if a "one-shop" mechanism such as the Ocean Affairs Council would be adopted, the development of OWP and the addressing of disputes among different users, particularly with fishers, fishers' associations, and cooperatives, would be more effective and promising.

Keywords: offshore wind power (OWP); Fisheries Act; Ocean Affairs Council (OAC); fishing rights fisheries; property in rem



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1. Introduction

Wind energy has been the renewable power supply that is most utilized today, mainly by onshore as well as offshore wind power generators. The high availability of wind resources, and the maturity of wind-energy-related technology compared with other renewable energies, are likely the reasons that wind energy is recognized as essential to reaching the commitments made by states to reduce the emission of carbon dioxide (CO₂) and alleviate the negative impacts from global warming, particularly required in many international environmental legal instruments, such as the Kyoto Protocol [1].

Although offshore wind power (OWP) originated in the 1990s, the development of this new technology has just begun to happen, and depending on the needs of different states, has grown by different means [1]. Because available land could easily be the limiting factor for the development of onshore wind farms and because environmental impacts caused by the operation of offshore wind farms are generally less than those onshore, utilizing wind energy offshore could be treated as a workable means to address this problem. The development of OWP is also able to move us a step closer to the future of a sustainable electricity supply. For example, the offshore wind resource in shallow waters around the North Sea is enormous. Bordering states, such as the United Kingdom, France, Germany, The Netherlands, and Denmark, together have enough technical potential to accommodate 114 GW of offshore wind energy, which is a great carbon-free energy, especially for those densely populated states [2].

Since the early 2000s, Taiwan has expended great efforts to facilitate offshore wind technology developments. In 2006, the Program of the First Phase of Offshore Wind Power Production, which is a government-adopted policy to develop OWP, was officially announced, despite the fact that further development of technology related to OWP has yet to occur. After the Fukushima incident, Taiwan's government took additional steps to implement the country's first offshore wind farm by creating the Thousand Wind Turbines Promotion Program and promulgating a Demonstration Subsidy Ordinance [3]. Later, the "Four-year Wind Power Promotion Plan" adopted in 2017 further announced that "the offshore wind power strategy consists 3 phases, which include Demonstration Incentive Program, Zones Application for Planning, and Zonal Development, the goal of which is to reach the 5.6 GW capacity for offshore wind by 2025" [4]. Based on the information from the Thousand Wind Turbines Promotion Office (TWTPO), 43 offshore wind turbines, with a total 234 MW capacity, have been installed off Taiwan's west coasts as of September 2022 [5].

Based on the aforementioned discussion, the development of OWP in Taiwan seems promising in the near future. However, it is facing some unwanted challenges recently, particularly the protests from fishers. On 27 July 2015, fishers in 80 fishing vessels surrounded the construction site of the Fuhai Demonstration Project off the coasts of the Changhua County to protest the establishment of the air-sea observation tower without their consent. Those fishers requested that the developer of the Fuhai Project, in addition to the compensation agreed by both sides, must increase the amount of compensation for their livelihood loss in order to continue the project. The developer, however, countered that there is no legal ground for fishers to request the additional 100 million NTD (or approximately USD 3 million). Negotiations between the developer and fishers are still ongoing [6]. Similar dispute also occurred in the Formosa Project, which also resulted in the significant delay in the schedule for the installation of offshore wind turbines in those demonstration projects [7].

The purpose of this paper is to understand jurisdiction over offshore areas in Taiwan from legal and administrative perspectives via analyzing conflicts between OWP developers and fishers in Taiwan. This paper firstly introduces the status of OWP development in Taiwan. Secondly, jurisdiction over offshore areas in Taiwan, particularly those related to fisheries, is also examined. Third, relevant regulations in existing laws related to offshore area jurisdiction are discussed. Finally, conclusions to address conflicts between developers and fishers are provided.

2. Development of Offshore Wind Power in Taiwan

Wind energy is a form of renewable energy that can help states transition to clean energy and meet national and international greenhouse gas reduction obligations. Before discussing the topic, it is important to indicate that wind energy, both onshore and offshore, is considered as a renewable energy source and is, thus, administered under Taiwan's national energy policy in Taiwan, despite the debatable fact of the very existence of "energy policy" in Taiwan. Because of this, the development of OWP in Taiwan is actually parallel to renewable energy sources.

The role of renewable energy in electricity generation, in particular from solar and wind energy, has tremendously increased its importance in combating global warming and related climate change. Despite the fact that fossil fuels, which are plentiful and relatively cheap, have improved societies and enabled significant improvements in relation to technologies and living standards, plentiful sequestered ancient carbon has also been released into the atmosphere, primarily in the form of CO₂, and resulted in many unwanted adverse consequences. The significant reliance on the combustion of fossil fuels has been shown to have heavily increased the concentration of CO₂ in the atmosphere and resulted in "global warming" that will increase the greenhouse effect of the Earth. The consequences of global warming include worse and more frequent droughts, stronger rainstorms and typhoons causing floods, and depletion of marine living resources, such as from coral

bleaching. Meanwhile, global warming also resulted in the sea level rising, and, thus, people from Small Island Developing States (SIDS) were forced to move to other places and become “environmental refugees” because their islands may become uninhabitable, such as in the case of Tuvalu [8]. Recently, studies also indicated that “island nations must place a high priority on resolving the precise styles and rates of change that will occur over the next century and reconsider the implications for adaption [9]”.

The development of Taiwan’s renewable energy can be traced back to the 1900s. Hydropower was the main source of renewable energy to generate electricity for civil utilization [10]. Later, research on other renewable energy, such as tidal, wave, and geothermal heat have been implemented in a pilot, small-scale operation since the 1950s, but all of these renewable energy sources were not able, and still are not able, to be commercially operated like hydropower [11]. It should also be noted that the development of renewable energy was not due to environmental considerations at the beginning. Rather, it was based on the concern of national security from the perspective of not over-depending on fossil fuels. As an island nation, Taiwan has almost no fossil fuel reserves, meaning that Taiwan has to import the fossil fuels it needs from overseas, particularly from the Middle East. In order to prevent diminishing reserves of Taiwan’s foreign exchange as well as threats from the control of Taiwan’s energy supply, the development of utilizing other energy sources to reduce Taiwan’s needs on fossil fuels is imperative.

Recently, in order to promote the sustainable utilization of Taiwan’s energy, the Executive Yuan of Taiwan, the highest-level agency in its administrative branch, adopted the “Policy Framework of Sustainable Energy” in 2008 to demonstrate that Taiwan has decided to reduce energy consumption and encourage the development of renewable energy [12]. The Policy Framework stipulated that renewable energy would support 8% of national electricity in 2025, and the CO₂ emission would be reduced by 30% by 2030. In addition, a system to reward the generation of green energy, including renewable energy, was established in this Policy Framework to enhance the energy economics of Taiwan. In 2011, Taiwan further announced two national plans related to the development of renewable energy, namely “Thousand Wind Turbines” and “Million Rooftop Photovoltaics (PVs)”. For the former, 400 onshore and 600 offshore wind turbines, with a total capacity of 5.2 GW, were scheduled to be installed by 2030 [13]. For the latter, the government aimed to installed solar PV panels on the buildings’ rooftops with 20 GW PV capacity by 2025 [14].

Subsequently, the “Green Energy Industry Advancement Promotion Plan” was approved by the Executive Yuan in 2014, in which it has decided that Taiwan’s energy sector in the coming decades will focus on solar energy as well as onshore and offshore wind power. The government will also provide assistance regarding technologies related to the development of these two renewable energy sources and relevant financial supports [3].

As mentioned earlier, the strategy for Taiwan’s offshore wind power development includes three different phases, including the “Demonstration Incentive Program”, “Zones Application for Planning”, and “Zonal Development [4]”. In the beginning phase, in order to prevent relevant risks, the government decided to initiate the development of offshore wind power with a small-scale, pilot-based offshore wind farm for demonstration purposes. The “Offshore Wind Power Demonstration Incentive Program” was thus adopted in 2012 to this end. Through providing subsidies for installation costs, this program encouraged companies to establish demonstration wind farms (TWTPO, 2022). Currently, there are three demonstration cases (including Fuhai, Formosa, and Tai-Power Company) that have been endorsed by the government, all of which were planned for establishment off the west coast of Taiwan [15].

3. Jurisdiction over the Offshore Area in Taiwan

There is no single act whose jurisdiction exclusively administers the entire offshore area of Taiwan. Instead, the jurisdiction over the offshore area of Taiwan is governed by several domestic laws. The Law on the Territorial Sea and the Contiguous Zone of the Republic of China (the TS Act) [16] and the Law on the Exclusive Economic Zone (EEZ) and

the Continental Shelf of the Republic of China (the EEZ Act) [17], both of which entered into force on 21 January 1998, form the principal legal basis of Taiwan's ocean governance. Others, such as the Fisheries Act [18], the Coastal Zone Management (CZM) Act [19], etc., constitute part of the governance regime for Taiwan's offshore areas. In addition to these acts, there are still several acts whose jurisdiction may extend to the offshore areas, such as the Marine Pollution Control Act.

3.1. The TS Act and the EEZ Act

In the TS Act, it stipulates that Taiwan's sovereignty "extends to its territorial sea, the air space over its territorial sea, its seabed and its subsoil [16]", and its territorial sea "shall be the sea area between the baseline and the outer limits measuring outwardly twelve nautical miles from the baseline [16]". In the EEZ Act, the EEZ of Taiwan "denotes the sea area contiguous to the outer limits of the territorial sea and to a distance measuring outwardly 200 nautical miles from the baseline of the territorial sea [17]", and its continental shelf is "the submarine area that extends beyond its territorial sea through the natural prolongation of its land territory to the outer edge of the continental margin [17]". Interestingly, in these two acts, no governmental departments or agencies are designated as the competent authority in charge of relevant issues in these maritime zones. In addition, Article 5 of the TS Act stated that the baseline and the outer limits of the territorial sea "shall be decided by the Executive Yuan". In other words, actions related to the territorial sea of Taiwan and their decision-making should be taken at the cabinet level.

The Executive Yuan, according to the aforementioned Article 5 of the TS Act, thus promulgated the first part of Taiwan's territorial baselines and the outer limits of the territorial sea and contiguous zone on 10 February 1999, and later revised them in 2009 [20]. As shown in Figure 1 [20], territorial baselines of Taiwan are formed by the "combination of straight baseline in principle and normal baseline as exceptions [16]". In particular, in the western coasts of Taiwan a straight baseline is drawn from the low-water line off Taoyuan's coast (T7) directly to the offshore Penghu Islands (T8). Therefore, most nearshore areas off Taiwan's western coasts, including the location of the aforementioned three Demonstration Projects, fall into the "internal water" regime under the TS Act.

3.2. The CZM Act

The CZM Act, which was just recently adopted in 2015, also constitutes an important role related to the jurisdiction over Taiwan's offshore areas, particularly coastal zones. In its Article 2, a coastal zone is defined as a "zone of land, water, seabed, and subsoil designated and announced by the Central Competent Authority based on environmental characteristics, ecological integrity, and management requirements in accordance with the following principles; boundaries for marine area may be drawn using the coordinates of points to link a straight line [19]", and is further categorized into two different types of areas: the "Shore land area" and the "Offshore area". The former means an area "from the average high tide line to the first provincial highway, coastal road, or mountain ridge [19]"; the latter indicates the area "from the average high tide line to the 30-m isobaths or 3 nautical miles towards sea whichever is longer in distance, but not exceeding territorial sea and its seabed and subsoil [19]". In other words, activities within 30-m isobaths or 3 nautical miles measured from the coasts are administered by the CZM Act as well.

Regarding the competent authority, Article 3 stipulates that the Ministry of Interior is the competent authority in the central level. In addition, it further designates the municipal government and the county (city) government as the competent authority at the municipal and the county (city) level, respectively. In other words, the jurisdiction under the CZM Act includes not only the central government level but also municipal and county (city) government, which are not similar to legislation in the TS Act and the EEZ Act governed exclusively by the central level. Further, the definition of the baseline in the CZM Act is also inconsistent with the TS Act. In the CZM Act, the scope of the coastal zone is determined by the "average high tide line", but in the TS Act the baseline is decided by the "low-water

line”. Meanwhile, the concept of “isobaths” is brought into the CZM Act to determine the outer limits of the coastal area, which may further result in the complexity and difficulties when determining the outer limits of Taiwan’s coastal area.

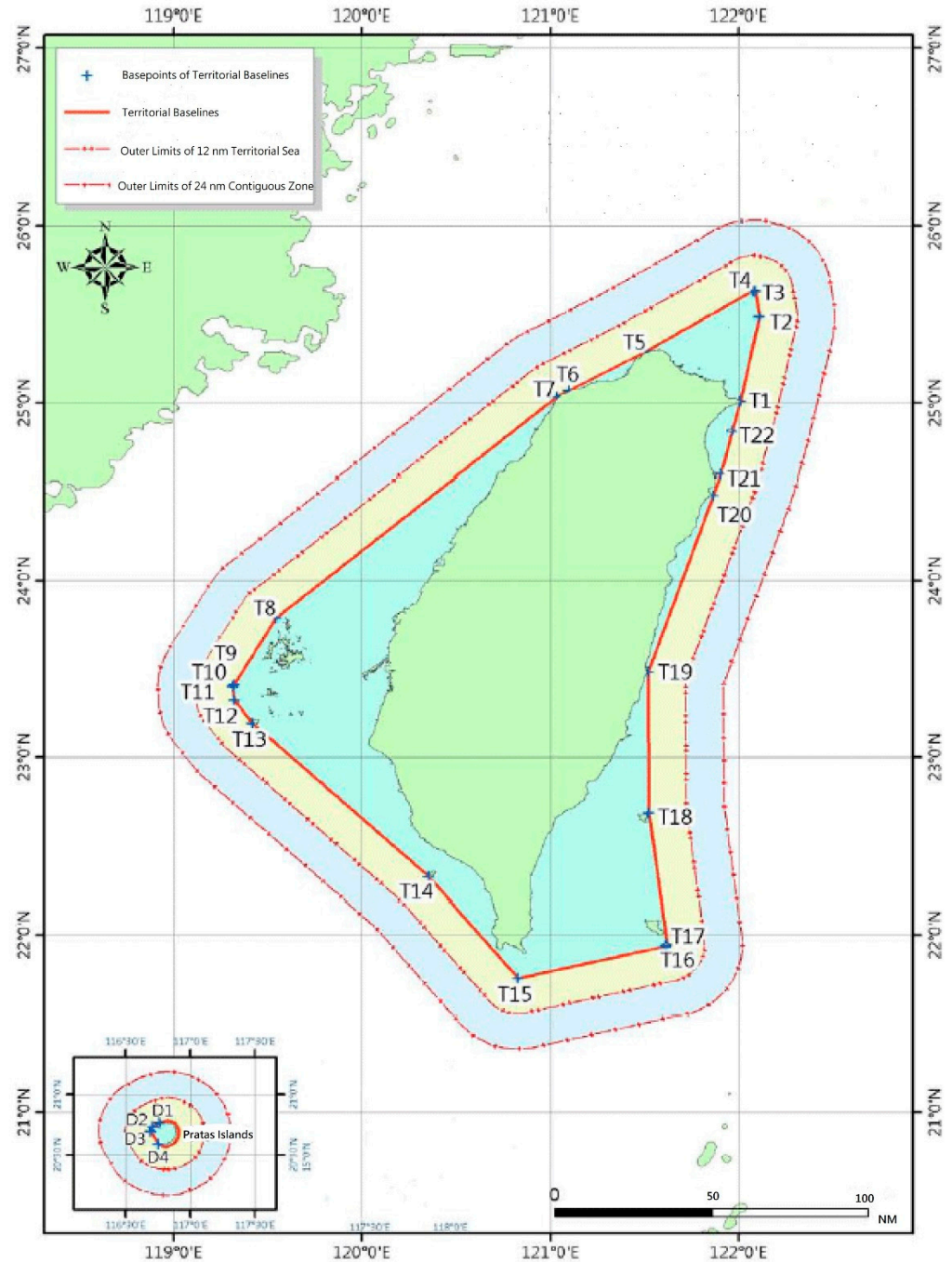


Figure 1. The First Part of Taiwan’s Territorial Baselines and Outer Limits of the Territorial Seas and Contiguous Zone.

3.3. The Fisheries Act

The Fisheries Act, first adopted in 1929 when the Republic of China government was still in mainland China, plays an equally essential part in Taiwan’s ocean governance. The purpose of the act is to “conserve and rationally utilize aquatic resources, to increase fisheries productivity, to promote sound fisheries development, to guide and assist the recreational fishery, to maintain the orderly operation of the fisheries, and to improve the livelihood of fishermen [18]”. Regarding the competent authority for all three government

levels (central, municipal, and county/city governments), Article 2 stipulates that the Council of Agriculture of the Executive Yuan is the competent authority at the central government, as well as municipal and county/city governments at municipalities and counties/cities, respectively.

Three different types of fisheries are defined in this act, including “fishing right fisheries”, “directed fisheries”, and “recreational fisheries”. As the only one related to the governance of offshore areas, fishing right fisheries are regulated in Chapter 2 of the Fisheries Act. Article 15 stipulates that “fishing rights” include:

1. Set net fishing right: the right to set up underwater rocky cliffs, build fences, or install fishing gears within a specific water area for catching or harvesting aquatic animals;
2. Demarcated fishing right: the right to partition a specific water area for operating aquaculture;
3. Exclusive fishing right: the right to use a specific water area to form a fishing ground for fisheries access privilege holders to operate one of the following fisheries:
 - (a) Catching or harvesting aquatic organisms.
 - (b) Aquaculture.
 - (c) Catching or harvesting aquatic animals with anchored fishing gears within the waters at a depth of twenty-five meters or less [18].

In addition, “fisheries access privilege” means the right to operate fishery within the area of the authorization of exclusive fishing right [18]. It should be noted that, in the last paragraph of Article 15, only “fishermen’s associations or fisheries production cooperatives” can qualify as exclusive fishing right holders as referred to by the “exclusive fishing right” mentioned above. In other words, neither individuals nor other private groups are eligible to become holders of exclusive fishing rights.

In addition, the term of fishing rights is 5 years for “set net fishing right” and “demarcated fishing right”, and 10 years for “exclusive fishing right”. In the Fisheries Act it stipulated that “upon the expiration of the term as referred to in the preceding paragraph, the fishing right holder may be preferred to apply for renewing the respective right” [18]. It further stated that “the competent authority, according to the production of fishery resources and taking into account minerals exploration and exploitation, navigation, irrigation, environmental protection, and other public interests, shall make an integrated plan with respect to the fishing right fishery in public waters and shall elaborate and regularly publicize relevant programs annually, as well as accept applications for fishing rights” [18]. In addition, “the programs as referred to in the preceding paragraph may be revised according to practical needs, and the revision shall be promulgated [18]”. If necessary, “the competent authority may alter or revoke its approval to fishing right or suspend the operation of any fishing right under certain circumstances, such as the requirements of national defense, economic utilization of land, conservation of aquatic resources, requirements of environmental protection, etc. [18]”.

More importantly, it stipulates that “fishing right shall be considered as a right in rem. Except as this Act otherwise provides, the provisions of the rights in rem of real property in the Civil Code [21] shall, *mutatis mutandis*, apply [18]”. According to the Civil Code, the owner of such a right “has the right . . . to profit from it, and to dispose of it freely, and to exclude the interference from others [21]”. Meanwhile, the owner also “has the right to demand its return from anyone, who possesses it without authority or who seizes it [21]”. Where the ownership is interfered with, “the owner is entitled to claim the removal of the interference; and where the ownership might be interfered, the owner is entitled to claim the prevention of such interference [21]”. In other words, when a fisher or a fishers’ association, or cooperative is granted the fishing right, the said right becomes the right in rem of the owners.

Such a conclusion can also be evidenced by relevant provisions in the Fisheries Act. For examples, Article 21(1) stipulates that “The creation, acquirement, alternation, and loss of fishing right will not effect until the record has been made”, which is based on Article 758 of the Civil Code. Despite the fact that exclusive fishing right “shall not be the subject of any other rights or juridical acts other than entitling the holders to have fisheries

access [18]”, Article 24 states that “Set net fishing right and demarcated fishing right shall not be the subject of any other rights or juridical acts”, but they are still applicable in the area of “succession, transfer, and mortgage”. Articles 25 to 27 further regulate details of fishing rights in the areas of making mortgage, right merged or subdivided, and shares. If “administrative dispositions cause any loss to the fishery operator, the relevant competent authority or the party claiming alteration, revocation, or termination shall reconcile the operator to make appropriate compensation for the losses [18]”.

4. Discussion

The development of OWP may affect fishing activities in a number of ways. First, off-shore development may affect fish resources, causing loss of catch and fishing income. One of the major issues of concern is the impact of construction noise, which can permanently displace fish species from their breeding and feeding grounds [22]. OWP facilities may result in disturbance to habitat on the sea floor from turbine construction, cable placement, and barge anchorage. There are also concerns over the impacts of electromagnetic fields from cables and connections and the impacts of operational noise. On the other hand, however, research has found that fixed-installed offshore wind farms can lead to an increase of fish population, as the wind turbines act as artificial reefs, attracting mollusks which serve as food for some fish species [23,24]. The extent of the impacts depends on the characteristics of the marine species, and in particular whether the species is sessile/sedentary (stationary on the sea floor) or non-sessile.

Secondly, as offshore wind farms require the designation of safety zones, which is also stipulated in Article 60 of the United Nations Convention on the Law of the Sea, as well as the right to exclude others from certain areas around turbines, fishing may be excluded in traditional fishing grounds. For example, in the UK, there is a restriction of 500 m around the entire site during construction, and after construction, 50 m around each turbine. Fishing vessels will be excluded when there are closures for maintenance. The displacement of fishing vessels may result in the need to (1) navigate a longer distance to alternative fishing grounds for fishing, which will cause a significant increase in fuel costs; (2) change their fishing patterns, including fishing gear used and species targeted, leading to a change in costs and the earnings profile of vessels due to the fishing pattern they may not be familiar with; and (3) increase conflict over diminished fishing grounds [23]. However, where there is reduced access, offshore wind farms can act as conservation areas, leading to increased fish numbers and fishing opportunities. Thirdly, loss or damage to fishing gear due to anchor or gear snagging on infrastructure increases gear costs and loss of fishing time [25].

As a small island nation without rich natural resources, the development of renewable resources becomes an essential priority for Taiwan. Although the development of OWP seems promising in Taiwan due to natural circumstances and the support of the governmental policy, several issues remain unresolved and could impede the development of such energy.

Firstly, administration and jurisdiction over offshore areas in Taiwan are not clearly defined. Under the framework of the TS Act and the EEZ Act, most areas off Taiwan’s west coasts belong to “internal waters” in which the “absolute sovereignty” of Taiwan extends. It should be generally accepted that the administration over maritime zones on the seaward side of the territorial baseline, including the territorial sea, contiguous zone, EEZ, and continental shelf, reside in the central government based on the TS Act and EEZ Act. It seems acceptable by many people that the central government is entitled to administer its internal waters. However, whether local governments are entitled to administer maritime zones similar to the land territory remains debatable. Such a question is not clearly defined in the Constitution and the Local Government Act, nor concluded in either practical and academic aspects.

In the past, local governments seemed entitled (and were willing) to administer maritime zones within 3 nautical-mile territorial seas. However, today, waters of many

counties' coasts off the western Taiwan (such as Changhua and Yunlin) as well as those in the eastern (Taitung) and northern Taiwan (New Taipei City) are no longer territorial seas but internal waters up to 50 nautical miles wide. Thus, whether local governments still have the ability, capacity, financial support, and willingness to exercise their traditional jurisdiction in an extended maritime zone (3 nautical-mile territorial sea and the internal waters) is not a difficult question to answer. Further, those internal waters were created due to the uses of straight baselines, and were never considered as internal waters before 1999. Under the framework of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) [26], it stipulates that "where the establishment of a straight baseline . . . has the effect of enclosing as internal waters areas which had not previously been considered as such, a right of innocent passage . . . shall exist in those waters [26]". In this case, foreign vessels enjoy the right of innocent passage through these internal waters. If a local government, whether at the municipal or county/city level, would be eligible to administer the said waters, it would face a problem that a local government would need to engage in foreign affairs and deal with matters with vessels from other countries, which is apparently not appropriate.

Secondly, regulations in those maritime acts are inconsistent with each other, and no acts or competent authorities apply to, or are designated for, some of the internal waters. For example, in the TS Act, the normal baseline is determined by the "low-water line", but in the CZM Act, the offshore area is defined by "average high-water line". The former is in line with the requirement stipulated in the 1982 UNCLOS, but "average high-water line" would result in confusion because of the definition of "average". The high-water line of a 5-year average and a 20-year average could be significantly different. In addition, as mentioned earlier, the TS Act adopts a straight baseline as the principal approach, the consequence of which is that many waters which were not recognized internal waters of Taiwan—thus, foreign vessels have freely navigated through these waters for a very long time (such as the maritime area between Taiwan and its offshore Peng-Hu Islands off its west coast, as shown in Figure 1)—would suddenly become Taiwan's internal waters, the scope of which may extend tens of nautical miles seaward measured from the coasts. However, unlike in the case of the territorial seas, the TS Act does not stipulate either relevant regulations or the competent authority for the internal waters. With regard to the CZM Act, despite the fact that it does define the offshore area, the outer limits of such an area reaches only 30-meter isobaths or 3 nautical miles seawards, whichever is longer in distance. Therefore, many of the internal waters could be outside of both the scope of the CZM Act and the TS Act, and thus become a "zone of legal vacuum".

Thirdly, the Fisheries Act turns the public maritime zones into private property, mainly owned by fishers, fishers' associations, and cooperatives. Under the framework of the 1982 UNCLOS, maritime zones, including the internal waters, territorial seas, EEZs, and continental shelves are under the jurisdiction of a coastal state. In other words, those maritime zones should belong to every national or be considered "the common property" of all nationals. The government, whether at the central or local level, just administers these maritime zones on behalf of its nationals to ensure sustainable utilization. If environmental damages in these maritime zones occur, the government should, on behalf of its nationals, require the polluters to compensate for the damages they caused. Such compensation should be utilized by the government to restore the environment (as far as the government possibly can) to minimize the loss to its nationals whose livelihoods depend on the oceans. However, under the Fisheries Act, once fishers, fishers' associations, or cooperatives are granted fishing rights, such rights will become their private property, meaning that these rights can be at least "succeeded, transferred, and mortgaged [18]". Further, when their fisheries are damaged, it is no longer the government but the fishers, fishers' associations, and cooperatives eligible to require compensation from polluters or developers because of damage to their "property rights". More importantly, such compensation will no longer go to the government for environmental restoration but would be paid directly to fishers, fishers' associations, and cooperatives. In other words, maritime zones of those fishing

right fisheries in Taiwan are no longer the common property of all nationals but literally the private property of specific people or groups.

In fact, most states in the world, such as the United States, Australia, and the United Kingdom, treat fishing rights as a “privilege right” rather than a “property right”. In addition to Taiwan, Japan is the other state which considers fishing rights to be property rights. In the Fisheries Law of Japan [27], Article 23 clearly stipulates that the fishing rights shall be considered as a right in rem and subject to the relevant regulations related to land, which is similar to that in Taiwan’s Fisheries Act. Thus, any development within the areas governed by fishing rights is subject to fishers’ attitudes. Developers either have to compensate fishers with huge amounts of money for the loss of fishers’ property rights or they will encounter strong resistance from them. This is also one of the reasons why no offshore wind farms have been established in Japan. To overcome this situation, the government of Japan once planned to buy back the fishing rights from fishers after the adoption of the new Fisheries Law in 1949, despite the fact that it was not actually implemented. The then-Japanese government planned to spend billions of Japanese Yen (JPY) to buy back such rights. When fishers reapplied to the government for fishing rights, there were no longer the property right of fishers, meaning that fishers cannot require compensation from polluters or developers, and the government will not need to compensate the fishers when such rights are cancelled or revoked [28].

Before the implementation of this plan, many Japanese developers are currently seeking development within major industrial port areas in order to circumvent this type of trouble from fishers. This is because commercial fishing activities within the designated port areas are generally not permitted and the local fishing cooperatives were, in fact, already compensated when such industrial ports were developed. Therefore, developers do not have to worry about the negotiation with local fishers’ cooperatives if the turbines are built only within the port areas [29]. More recently, a few experimental projects, such as that off the coast of the Choshi city, were successfully developed in the open sea areas where local fishers had some power. Factors that contributed to their successful negotiation include: (1) they hired the local boats (fishers) for many of their operations, such as environmental studies and some survey/construction-related activities. It meant new job opportunities for these fishers; (2) these projects were one of the first national projects and triggered a sense of pride in hosting such projects among the local residents. For instance, well-known political people (such as ministers and congress members) and foreign visitors came to these small fishing villages, which would never have happened without the offshore turbines [29].

In addition, in the UK the Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) was set up in 2002 to foster good relations between the fishing and offshore renewable energy sectors and encourage the co-existence of the industries. Comprising fishing industry bodies and representatives from developers, government, and The Crown Estate, its objectives are to share knowledge on issues arising from the interaction of the fishing industry and offshore renewables activity; share, develop, and promote best practice; and liaise with other sectors with interests in the marine environment. The Crown Estate provides secretarial services. Among other things, FLOWW has published online lists of stakeholders such as representative fishing organizations and others with an interest and concern in offshore wind energy and fishing [30].

Thus, based on the experience of Japan, if we would like to change the current fishing rights from property in rem to a privilege right similar to most states in the world, the government of Taiwan may need to buy all fishing rights back from fishers, fishers’ associations, and cooperatives first, then revise the current Fisheries Act to categorize such rights as a privilege right. However, the government will need to pay a vast amount of money for doing so. In addition, those with fishing rights are not necessarily willing to accept such a change, and this may, thus, result in unpredictable political consequences. Otherwise, the UK case, by establishing a mechanism to incorporate all stakeholders including fishing industry, government, and OWP developers, may also be a good lesson for Taiwan. How to substantively resolve this issue, either to directly revise the Fisheries Act or to find a

common ground between those with and without fishing rights, tests the wisdom of the government officials concerned.

5. Conclusions

OWP has become a new emerging issue in Taiwan. As a green energy initiative, OWP can, to a certain degree, fulfill Taiwan's energy needs in the future without causing environmental damage to Taiwan, and would result in the fewest protests and least resistance from its nationals. Despite this, however, jurisdiction over the offshore areas in Taiwan seems to be not supportive to the development of OWP. The different acts of jurisdiction are not consistent with each other and are not administered by a specific agency. Most importantly, the Fisheries Act allows specific people or group to enjoy property rights in Taiwan's offshore areas, which result in endless negotiations and compensations between developers and the owners of such rights. To avoid this in the short term, Japan's experiences of developers installing wind turbines in the port areas, could be a possible alternative for OWP developers.

If such a situation is to be improved, revision on these relevant acts seems a must. In addition, a specific mechanism to address the development of OWP is also important and necessary. The Ocean Affairs Council of Taiwan could be an appropriate medium to this end. As the specialized agency for addressing marine affairs, the function of the Ocean Affairs Council is to integrate, coordinate, and promote policy related to marine affairs, despite the fact that some desired functions, particularly shipping and fisheries, are not yet included in the functions of the Council. If such a "one-shop" mechanism would be adopted, the development of OWP and the addressing of disputes among different users, particularly with fishers, fishers' associations, and cooperatives, would be more effective and promising. In particular, the Council could try to establish a liaison mechanism similar to that of the UK to incorporate all stakeholders related to OWP development to foster good relations among them so as to minimize or even prevent the emergence of conflicts and achieve the current win-win situation among different stakeholders, as in the case of Choshi city in Japan. The future of OWP will still rely upon the political will of the government, developers, and all stakeholders and is worthy of sustained attention.

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References

1. Esteban, M.; Dolores, J.; Diez, J.; López, J.S.; Negro, V. Why offshore wind energy? *Renew. Energy* **2011**, *36*, 444–450. [[CrossRef](#)]
2. Smit, T.; Junginger, M.; Smits, R. Technological learning in offshore wind energy: Different roles of the government. *Energy Policy* **2007**, *35*, 6431–6444. [[CrossRef](#)]
3. Gao, M.Z. Europe's Policy Framework for Promoting Offshore Wind Energy: Lessons for Taiwan and Other Countries. *Renew. Sustain. Energy Rev.* **2015**, *1*, 3–16.
4. Bureau of Energy, Ministry of Economic Affairs. Four-Year Wind Power Promotion Plan. Available online: https://www.moeaboe.gov.tw/ecw/populace/content/wHandMenuFile.ashx?menu_id=5493&file_id=4107 (accessed on 30 September 2022).

5. Thousand Wind Turbines Project Office. Demonstration Incentives of the Offshore Wind Power. Available online: <http://www.twtpo.org.tw/eng/offshore/demonstration.aspx> (accessed on 29 September 2022).
6. Liu, H.S. 80 fishing vessels protested the construction of offshore wind farms. *Liberty Times News*, 28 July 2015. Available online: <http://news.ltn.com.tw/news/local/paper/901562> (accessed on 29 September 2022). (In Chinese).
7. Thousand Wind Turbines Project Office. Homepage of the Thousand Wind Turbines Project. Available online: <http://www.twtpo.org.tw/eng/Home/> (accessed on 29 September 2022).
8. Church, J.A.; White, N.A.; Hunter, J.R. Sea-level rise at tropical Pacific and Indian Ocean islands. *Glob. Planet. Change* **2006**, *53*, 155–168. [CrossRef]
9. Webb, A.P.; Kench, P.S. The dynamic response of reef islands to sea-level rise: Evidence from multi-decadal analysis of island change in the central pacific. *Glob. Planet. Change* **2010**, *72*, 234–246. [CrossRef]
10. Wu, C.H. Development of Electric Power and Industry in the Period of Japanese Occupation. *Newsl. Taiwan Stud.* **2019**, *113*, 4–7. (In Chinese)
11. Bureau of Energy, Ministry of Economic Affairs. 2007 White Paper on Energy Technology Research and Development; pp. 135–160. Available online: http://web3.moeaboe.gov.tw/ecw/populace/content/wHandMenuFile.ashx?menu_id=541 (accessed on 30 September 2022).
12. Executive Yuan, R.O.C. Policy Framework of Sustainable Energy. Available online: http://web3.moeaboe.gov.tw/ECW/populace/content/wHandMenuFile.ashx?menu_id=2154 (accessed on 30 September 2022). (In Chinese)
13. Liao, J.H. Residents in Hsin-wu Township, Taoyuan Say No to Wind Turbines in the Proximity of Their House. Taiwan Environment Information Center. Available online: <http://e-info.org.tw/node/79163> (accessed on 3 October 2022). (In Chinese).
14. The Single Service Window for Sonar PV, Policy Directives. Available online: https://www.mrpv.org.tw/Article/PubArticleEng.aspx?type=engpolicy&post_id=13506 (accessed on 30 September 2022).
15. Kao, S.M.; Pearre, N.S. Administrative arrangement for offshore wind power developments in Taiwan: Challenges and prospects. *Energy Policy* **2017**, *109*, 463–472. [CrossRef]
16. Laws and Regulations Database of the Republic of China. Law on the Territorial Sea and the Contiguous Zone of the Republic of China. Available online: <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=A0000009> (accessed on 5 October 2022).
17. Laws and Regulations Database of the Republic of China. Law on the Exclusive Economic Zone and the Continental Shelf of the Republic of China. Available online: <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=A0000010> (accessed on 5 October 2022).
18. Laws and Regulations Database of the Republic of China. Fisheries Act. Available online: <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=M0050001> (accessed on 5 October 2022).
19. Laws and Regulations Database of the Republic of China. Coastal Zone Management Act. Available online: <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=D0070222> (accessed on 5 October 2022).
20. Department of Land Administration, Ministry of Interior of the Republic of China. The First Part of Taiwan's Territorial Baselines and the Outer Limits of the Territorial Sea and Contiguous Zone. Available online: <https://www.land.moi.gov.tw/upload/d-20180906120151.pdf> (accessed on 8 October 2022). (In Chinese)
21. Laws and Regulations Database of the Republic of China. Civil Code. Available online: <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=B0000001> (accessed on 8 October 2022).
22. Methratta, E.T.; Dardick, W.R. Meta-analysis of finfish abundance at offshore wind farms. *Rev. Fish. Sci. Aquac.* **2019**, *27*, 242–260. [CrossRef]
23. Attril, M. *Marine Renewable Energy: Necessary for Safeguarding the Marine Environment?* Briefing, Marine Institute, Plymouth University: Plymouth, UK, 2012.
24. Stenberg, C.; van Deurs, M.; Støttrup, J.; Mosegaard, H.; Grome, T.; Dinesen, G.; Christensen, A.; Jensen, H.; Kaspersen, M.; Berg, C.; et al. *Effect of the Horn Rev 1 Offshore Wind Farm on Fish Communities. Follow-Up Seven Years after Construction*; (DTU Aqua Report No 246-2011); DTU Aqua: Lyngby, Denmark, 2011. Available online: <https://tethys.pnnl.gov/sites/default/files/publications/Horns-rev-1-fish-communities.pdf> (accessed on 6 October 2022).
25. Seafish. Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments. 6–7 August 2012. Available online: <https://www.seafish.org/document/?id=AA0CB236-1E2A-4D2A-9F86-49CEB2B6DD5E> (accessed on 6 October 2022).
26. United Nations. United Nations Convention on the Law of the Sea, 10 December 1982. 1833 U.N.T.S. 397. Available online: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed on 6 October 2022).
27. Fisheries Law of Japan, Article 23. Available online: <http://law.e-gov.go.jp/htmldata/S24/S24HO267.html> (accessed on 6 October 2022). (In Japanese)
28. Kaneda, Y. *Shinpen Gyogyōhōno Koko ga Shiritai*; Seizandō Shoten: Tokyo, Japan, 2010.
29. Matsuura, M. Offshore Wind Energy Developments in Japan: Dealing with fishermen and other stakeholders. In Proceedings of the 2nd International Conference on National Laws and Policy for Offshore Wind Energy, Taipei, Taiwan, 26–28 October 2016.
30. Wawryk, A. Fishing and the Development of Offshore Wind Power in Australia. In Proceedings of the 2nd International Conference on National Laws and Policy for Offshore Wind Energy, Taipei, Taiwan, 26–28 October 2016.