

Environmental Monitoring Report of Formosa II

Construction Phase (2021 April to June)

Monitoring & Improvement Summary

Monitoring Item		Monitoring Site	Monitoring Result Summary	Measures & Effects
Under construction-Bird Ecology	Offshore Bird	Wind farm and its periphery	<p>1. Species composition: 4 families, 7 species and 39 individuals were recorded in this quarter.</p> <p>2. Protected species: 1 protected species was recorded, including Greater crested tern (II).</p> <p>3. Flying Altitude: 100% of recordings were below 25m, which is not within the sweeping zone.</p>	—
	Coastal birds	<p>1. Xihu National Wetland</p> <p>2. Periphery coast</p>	<p>1. 8 orders, 16 families, 40 species and 1,918 individuals were recorded.</p> <p>2. Protected species: 5 protected species were recorded, including Little tern (II), Black-winged kite (II), Taiwan hwamei (II), Brown shrike (III) and Chestnut munia (III).</p>	—
	Nighttime Radar	Wind farm located at Chunan (north coast of Chunggang estuary) and Houlong (Haowang Cape)	<p>1. Flying direction: The main flying direction is N.</p> <p>2. Activity mode: Overall, activity frequency is slightly higher in early night compared to late night, with max frequency occurring at the 2200 time period. 23.8% of the tracks pass the wind farm area.</p>	—

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Under construction-Fishery	3 survey lines in wind farm area	<ol style="list-style-type: none"> 1. Fish: 9 families, 11 species and 163 individuals. Sea barbel takes the majority. 2. Fish egg: 3 families, 4 genera, and 103 eggs. Pacific seabream of Sparidae family takes the majority. 3. Fish larva: 5 families and 6 genera, 306 individuals. Eastern keelback mullet of Mugilidae family takes the majority. 	—
Under construction-Underwater Noise (including cetacean acoustic survey)	2 stations within wind farm area	<ol style="list-style-type: none"> 1. Whistles: No whistles were recorded this quarter. 2. Clicks: No clicks were recorded this quarter. 	—
Under construction-Marine Water Quality	10 stations within wind farm area	pH value is 8.1-8.2, water temperature is between 21.4-21.9°C, dissolved oxygen is between 6.3-6.5 mg/L, salinity is between 33.3-33.6 psu, transparency is between 50-70 cm, Coliform group is between <10-10 mg/L, Chlorophyll a is between 0.4-0.8 mg/L, BOD is between 0.7-0.9 mg/L, SS is between 2.6-11.4 mg/L, fat is ND. mg/L.	
Under construction-Marine and intertidal ecology	10 stations within wind farm area	<ol style="list-style-type: none"> 1. Marine ecology: phytoplankton: 4 phylum, 52 genus, 111 species; Chlorophyll a is between 0.12-1.00 µg/L, zooplankton: 11 phylum, 30 genre; benthic organism: 6 orders, 8 families, 9 species. 2. Intertidal ecology: Benthic organism: 4 orders, 5 families and 7 species 	

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Under construction- Terrestrial Ecology	Terrestrial power transmission system (including step-down station, land cable and its periphery)	<ol style="list-style-type: none"> 1. Plantation: 97 families, 273 genera and 362 species were recorded. 6 rare species were recorded, including Lanyu Podocarp, Common garcinia, Myoporum bontioides, Seremban, Fan palm and Kandelia obovata, all are cultivated. 2. Mammal: 2 orders, 3 families, 4 species and 19 individuals of mammals; 1 order, 2 family, 7 species of bats were recorded. No protected species were recorded. 3. Amphibian: 5 families, 5 species and 8 individuals were recorded. No protected species were recorded. 4. Reptile: 5 families, 7 species and 25 individuals were recorded. No protected species were recorded. 5. Butterfly: 4 families, 8 subfamilies, 20 species and 210 individuals were recorded. No protected species were recorded. 6. Bird: 28 families, 45 species, and 892 individuals were recorded. 2 protected species Brown shrike (III) and Black-winged kite (II) were recorded. 	—
Under construction- Intertidal Ecology	Planned important wetland in Chunan	<ol style="list-style-type: none"> 1. Plantation: 8 families, 8 genera and 9 species were recorded. No rare species were recorded. 2. Fish: 5 families, 6 species and 107 individuals were recorded. No protected species were recorded. 3. Crabs and Shrimps: 4 families, 6 species and 145 individuals were recorded. No protected species were recorded. 4. Conch: 4 families, 4 species and 172 individuals were recorded. No protected species were recorded. 5. Aquatic insects (including Odonata): for Odonata, 3 families, 10 species and 61 individuals were recorded; for aquatic insects, 3 orders, 6 families, and 231 individuals were recorded. No protected species were recorded. 	—

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Under construction-Cultural Heritage (Archeology monitoring during onshore construction)		Excavation area	Archeology monitoring for this project has been completed as of December 11 th , 2020. In the future, archeology monitoring will be conducted during excavation if excavation is conducted.	—
Under construction-Air Quality		1 station in residency around booster station	Day average value for TSP is 59 $\mu\text{g}/\text{m}^3$, Day average value for PM ₁₀ is 31 $\mu\text{g}/\text{m}^3$, Day average value for PM _{2.5} is 8 $\mu\text{g}/\text{m}^3$, Hourly max average value for SO ₂ is 1 ppb, and day average value is 1 ppb. Hourly max average value for NO is 5 ppb, and day average value is 2 ppb. Hourly max average value for NO ₂ is 11 ppb, and day average value is 6 ppb. Hourly max average value for CO is 0.2 ppm, and average value in 8 hours is 0.2 ppm. Hourly max average value for O ₃ is 31 ppb, and average value in 8 hours is 23 ppb. Major wind direction is WSW, day average wind speed is 0.2m/s. This quarter, all monitoring items comply with air quality standards. No abnormal issue is observed.	—
Under construction-Noise Vibration	Noise Vibration	<ol style="list-style-type: none"> 1 station in residency around booster station 1 station in residency along land cable Zhonggang Cihyu Temple 	<ol style="list-style-type: none"> Noise: In all stations (residency around booster station, residency along land cable and Zhonggang Cihyu Temple) L_{day}, L_{night} and L_{midnight} are between 50.3-62.0 dB(A), 50.3-58.5dB(A) and 48.9-55.1dB(A) respectively. Value of each station/time section comply to Second Type of Construction Noise Control Standards near roads wider than 8m wide. Vibration: In all stations (residency around booster station, residency along land cable and Zhonggang Cihyu Temple) L_{v10} day and L_{v10} night are between 30.0-33.9dB dB and 30.0-38.1dB respectively. Value of each station/time section comply to Japanese Control Standards of First Type of Zone. 	—

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Construction Noise	1 station in booster station periphery (1m)	<p>1. Normal frequency (20Hz-20kHz): L_{max} is between 74.6-75.6 dB(A), L_{eq} is between 61.5-62.5 dB(A), monitoring results comply with Second Type of Construction Noise Control Standard.</p> <p>2. Low frequency (20 Hz-200 Hz): $L_{eq,LF}$ is between 38.2-39.1 dB dB(A). Monitoring results comply with Second Type of Construction Noise Control Standard.</p>	—
Under construction-Groundwater Quality	<p>1. Water output location</p> <p>2. Planned important wetland in Chunan</p>	<p>1. Water output location: pH value is between 7.8; BOD is between 1.8 mg/L; COD is between 6.0 mg/L, SS is between 2.6mg/L, Ammonia nitrogen is between 0.05 mg/L, ADMI is N.D.mg/L, fat is between 0.7mg/L, water temperature is between 29.0°C, NO₃-N is 0.41, TP is between 0.044 mg/L mg/L, Dissolved oxygen is between 5.5 mg/L. All items comply to water quality standard for construction water output.</p> <p>2. Planned important wetland in Chunan: pH value is between 7.8-8.4; BOD is between 15.6-42.0 mg/L; COD is between 69.7-139.0 mg/L, SS is between 31.2-52.0 mg/L, Ammonia nitrogen is between 0.06-0.09 mg/L, ADMI is between 54-113 g/L, fat is between 1.2-7.1 mg/L, water temperature is between 23.4-31.8°C, NO₃-N is between 0.011-0.050, TP is between 0.168-0.435 mg/L, Dissolved oxygen is between 3.8-6.9mg/L mg/L. This quarter, BOD has exceeded class IV water body quality standards. All other monitoring items comply to class IV water body quality standard.</p>	<p>BOD measured in EIA and DA phases is also higher than class IV water body quality standard (referring to Protection Project of National Important Wetlands: https://wetland-tw.tcd.gov.tw/). It is inferred that the value is affected by organic pollutants in water from agriculture, water cultural, household and industry discharged into the wetland, which belongs to background value and is not caused by the construction of the Project.</p> <p>Monitoring will be continued to clarify the changes.</p>