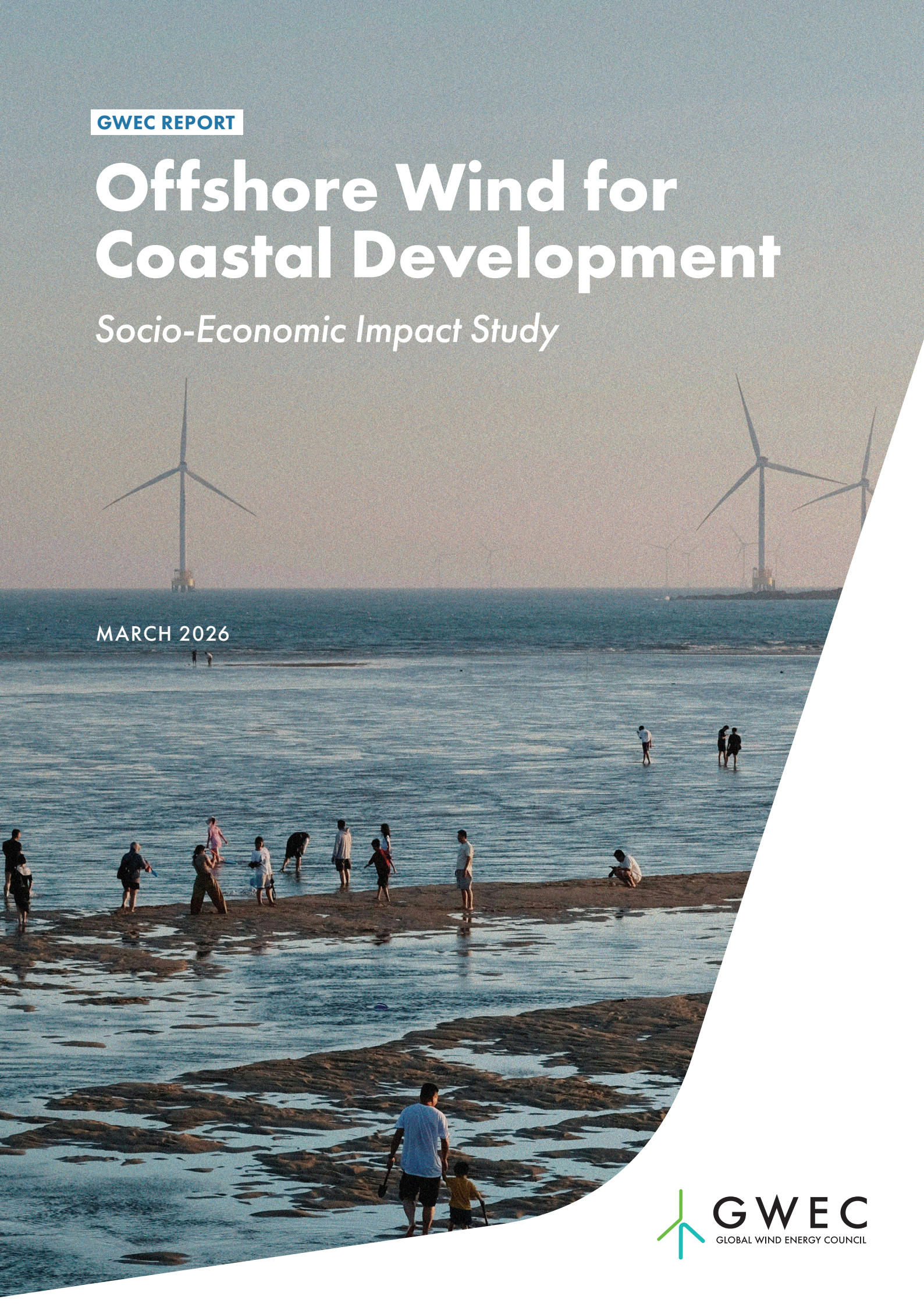
GWEC REPORT

Offshore Wind for Coastal Development

Socio-Economic Impact Study



MARCH 2026

GWEC
GLOBAL WIND ENERGY COUNCIL

The Global Wind Energy Council (GWEC) is the global trade association for the wind power industry, with over 1,500 members responsible for 70% of the world's wind capacity. Our members include major turbine manufacturers, energy companies, developers, and technology providers. GWEC advocates for the wind industry globally, collaborating with organisations like the IRENA, IEA, local associations and development banks to help governments and policymakers unlock wind energy's full potential.

GWEC's mission is to ensure that wind power fulfills its role as one of the key technology solutions to today's energy and climate challenges, forming the backbone of a new clean energy system and enabling trillions of dollars of investment while providing substantial economic and social benefits to host countries.

Attribution

Offshore Wind for Coastal Development: Socio-Economic Impact Study. 2026.

Editors and Acknowledgements

This report was reviewed by Ann Margret Francisco, Mark Hutchinson, Janice Cheong, and Jigs Consolacion from the GWEC team.

GWEC and NIRAS would like to give our sincere appreciation to the offshore wind sector and all stakeholders who agreed to be part of this study and made this report a success.

Lead Authors

The lead authors of this report were Ann Margret Francisco and Juan Miguel Consolacion from the GWEC team; and Raoul Kubitschek, Charisse Kirsty Libunao, Gianne Francis Alfred Manzano, Joyce Anne Asilo, Wen Huang, Goldie Mae Abad, Kose Mae Alegre, Felicisima Arriola, Chin-Wen Yang, and Jason Wang from the NIRAS team.

NIRAS is a multidisciplinary engineering and environmental consultancy that delivers integrated, cross-disciplinary solutions across development projects, process industries, and urban planning, covering buildings, energy, utilities, environmental management, and infrastructure.

With a strong presence across Asia—through offices in Manila, Taipei, Jakarta, Hanoi, Phnom Penh, Kathmandu, and Melbourne, as well as active networks in Japan and Malaysia. NIRAS combines global technical expertise with deep local knowledge and partnerships. Since establishing its regional footprint in 1990, NIRAS has implemented over 300 projects across Asia supported by more than 60 permanent regional staff, operating through a decentralised matrix organisation that ensures the right technical and management expertise is mobilised for each engagement.

Contents

Foreword

Ann Margret Francisco
Director of Asia Pacific
Global Wind Energy Council

The Asia Pacific region stands at a critical juncture in its energy transition, and the Philippines is leading the way in Southeast Asia. As offshore wind moves from vision to reality, evidenced by the ongoing 3,300 MW Green Energy Auction (GEA5) and advanced pre-development in San Miguel Bay and the Guimaras Strait, we must recognise that technical potential is only half the battle. To scale this industry sustainably, we must ensure that the transition is as equitable as it is ambitious.

Offshore wind has the potential to serve as a cornerstone of the Philippines' evolving energy landscape. Scaling this technology strengthens national energy security by reducing dependence on imported fuels and insulating the power system from global price shocks. Over time, greater domestic renewable generation supports a more resilient electricity system and helps stabilise power costs. In any developing country, volatile energy costs have long been a hurdle for national development. A successfully scaled offshore wind sector offers a path toward a more predictable, indigenous power supply that can fuel economic expansion and support the Philippines' long-term development.

While energy security and climate action remain important drivers, the conversation around offshore wind is now expanding beyond these objectives. The sector is increasingly recognised as a platform for industrial growth, job creation, and new economic activity across ports, manufacturing, and maritime services. This report adds that layer to the discussion, highlighting how offshore wind can also serve as a catalyst for economic development and long-term industrial opportunity.

The ability to achieve scale for offshore wind requires a "Social License to Operate" that is built on more than just goodwill. This report is also then a call to action for a comprehensive and inclusive benefit-sharing framework. We must move beyond discretionary programs and toward legally enforceable mechanisms that treat host communities as genuine partners. This includes early and transparent engagement with those most affected, particularly our fisheries and coastal sectors, to ensure their livelihoods are not just protected, but enhanced through this transition.

Crucially, we must invest in capacity building for local government units (LGUs) and community leaders. The success of a project is often determined at the local level. By empowering our regional partners with the tools, data, and governance structures—such as the Community Benefit Trust—we create an ecosystem where the industry is "locally anchored" rather than "locally imposed."

The roadmap laid out in these pages is essential for a sustainable scaling up of offshore wind in the Philippines. It is my hope that our partners across government and industry view these findings as necessary foundations for a mature, bankable, and socially resilient market. By getting the socio-economic framework right today, we ensure the longevity and success of the Philippine wind energy story for generations to come.

Abbreviations

AAI	Average Annual Increase
AEP	Annual Energy Production
ADB	Asian Development Bank
BESS	British Energy Security Strategy
BEIS	British Energy & Industrial Strategy
BFAR	Bureau of Fisheries and Aquatic Resources
BOI	Board of Investments
CAN	Climate Action Network
CAPEX	Capital Expenditure
CBA	Community Benefit Agreements
CBCRM	Community-Based Coastal Resource Management
CBF	Community Benefit Fund
CDF	Community Development Fund
CILQ	Cross-Industry Location Quotient
CLUP	Comprehensive Land Use Plan
CPBI	Census of the Philippine Business and Industry
CSO	Civil Society Organisation
CSR	Corporate Social Responsibility
DENR	Department of Environment and Natural Resources
DEVEX	Development Expenditure
DOE	Department of Energy
DTI	Department of Trade and Industry
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
EMP	Environmental Management Plan
EPC	Engineering, Procurement, and Construction
EPCI	Engineering, Procurement, Construction, and Installation
ESG	Environmental, Social, and Governance
FIT	Feed-In Tariff
FTE	Full-Time Equivalent
FPIC	Free, Prior and Informed Consent
GDP	Gross Domestic Product
GVA	Gross Value Added
GW	Gigawatt
GWEC	Global Wind Energy Council
HSE	Health, Safety, Environment
ICC	Indigenous Cultural Communities
IEA	International Energy Agency
IP	Indigenous People
IRENA	International Renewable Energy Agency

KII	Key Informant Interview
LCOE	Levelised Cost of Energy
LCR	Local Content Energy Requirement
LGU	Local Government Unit
LV	Low Voltage
METI	Ministry of Economy, Trade and Industry (Japan)
MPA	Marine Protected Area
MSP	Marin Spatial Planning
MV	Medium Voltage
MW	Megawatt
NCR	National Capital Region
DEPDev	Department of Economy, Planning, and Development
NGO	Non-Government Organisation
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OHTL	Overhead Transmission Line
OPEX/ OpEx	Operating Expenditure
OFW	Offshore Wind
OWESCs	Offshore Wind Energy Service Contracts
PPA	Philippine Ports Authority
PSA	Philippine Statistics Authority
PSF	People's Survival Fund
RA	Republic Act
RAS	Biproportional Matrix Balancing Method
RETF	Renewable Energy Trust Fund
RIO	Regional Input-Output
SEP	Stakeholder Engagement Plan
SME	Small and Medium Enterprise
TESDA	Technical Education and Skills Development Authority
UAV	Unmanned Aerial Vehicle
USD	United States Dollar
VAT	Value-Added Tax
WACC	Weighted Average Cost of Capital
WTG	Wind Turbine Generator

Executive Summary

Offshore wind projects in San Miguel Bay and the Guimaras Strait are moving decisively from vision to reality. Developers hold active service contracts; host ports are under assessment; and local governments are beginning to shape community agreements that will define how this new industry takes root. The opportunity is transformative.

This report is designed to inform and enable the next phase of decision making. By translating global experience into locally grounded, site-specific evidence, it seeks to turn ambition into shared value: providing policymakers, developers, and communities with a common evidence base to ensure offshore wind delivers long-term, inclusive, and locally anchored benefits for the Philippines. San Miguel Bay and the Guimaras Strait were selected for the study because they host projects at the most advanced pre-development stages. Both sites have active Offshore Wind Energy Service Contracts (OWESCs), identified host ports and staging areas, nearby shipyards, and planned port and logistics upgrades. These concrete developments make them realistic and policy-relevant areas for assessing how developer activity, port readiness, and local industry shape economic value retention from offshore wind.

To bridge the gap between technical potential and industrial success, the report anchors its findings in three strategic advocacy pillars. These pillars provide the framework for securing the "Social License to Operate" and establishing the Philippines as a mature, bankable offshore wind destination.

Strategic Findings and Policy Directions

1. Macroeconomic Impact and Regional Economic Drivers

The study identifies offshore wind (OFW) as a significant regional economic engine, capable of driving national prosperity through substantial GDP contribution, job creation, and industrial multipliers.

- **Macroeconomic contribution.** Across the modelled lifetimes (2027-2062), the two projects together generate an average annual GDP contribution of ≈ PHP 72-77 billion, equivalent to roughly 0.27-0.29% of 2024 Philippine GDP. Scenario 2's higher localisation increases local investment by roughly PHP 26 billion and yields the higher GDP outcome.

- **Employment and wages.** Total employment impact is estimated at ≈ 223,000–239,000 full-time equivalent (FTE) jobs annually across project timelines, producing ≈ PHP 37–40 billion in annual labor salaries. Critically, the induced (wage-driven) effect accounts for the majority (≈ 56%+) of job creation, meaning household consumption multipliers (agriculture, retail, transport) are primary employment drivers rather than direct wind-sector jobs.

- **Sectoral distribution and liquidity.** Manufacturing and construction capture significant benefits during construction; the offshore wind sector itself dominates O&M phase value. Interregional liquidity is material: for San Miguel Bay, roughly 53% liquidity in construction and 38% during operation; Guimaras results show lower liquidity (≈ 37% construction, 24% operation). These figures highlight national-level redistributive effects and the importance of national policy to retain value locally.

2. Frameworks for Equitable Benefit Sharing and Community Integration

A core finding of the report is that long-term stability is built on shared prosperity. Establishing a framework where benefits are shared equitably provides direct gains to host communities while securing the sustained social consent necessary across the entire project lifecycle. The study synthesises these into principles: context-specific design, early inclusive engagement, legal and governance clarity, capacity building, and transparent financing/sources and uses for community benefits.

To achieve this, the study recommends the following:

- **Adopt a national OFW benefit-sharing framework.** Establish minimum standards (transparency, eligible beneficiaries, monitoring KPIs) and anchor developer obligations in permit conditions and financing instruments.
- **Evaluate and encourage local content with a feasible roadmap.** Some potential local content can be developed with the government's careful support and roadmap planning. Target onshore electrical components, foundation components, port upgrading/works, and O&M services for localisation incentives and industrial co-investment to maximise manufacturing GDP capture.
- **Protect fishery livelihoods with an integrated package.** Combine time-bound compensation, community-based livelihood diversification programme, spatial planning (seasonal corridors), and fisheries co-management measures.
- **Workforce development & safety.** Invest in accredited offshore safety and technical training centers, educational grants and industry immersion programmes with developers to fill O&M and inspection gaps.
- **Create transparent community benefit funds with multi-stakeholder governance.** Ensure funds are independently audited, tied to milestones, and accessible to vulnerable groups.
- **Design a Monitoring and Evaluation (M&E) framework.** National-level indicators should track employment, income distribution, gender participation, local procurement share, and environmental/social grievance resolution; link M&E results to permit renewals or financial incentives.

3. Market Readiness and Global Competitiveness

To establish the Philippines as a mature and competitive destination for investment, the study identifies critical requirements for industrial and regulatory readiness across the following dimensions:

- **Governance and benefit delivery.** Existing benefit-sharing and community fund mechanisms were designed for other contexts and may require adaptation for offshore wind, including clearer allocation rules, stronger monitoring frameworks, and more structured stakeholder participation. Ensuring equitable distribution will depend on legal clarity, enforceable KPIs, and multi-stakeholder oversight.
- **Workforce readiness.** There is no direct workforce in existing industries, but experts who transition from existing infrastructure projects can help at early development stage, while construction and O&M phases have a significant capability gap. Training and certification for construction works and WTG maintenance will be vital to convert the local workforce into local hires and may attract overseas Filipino workers coming back.
- **Fisheries impacts.** Construction is likely to cause localised disruption to fishing grounds; while modelled induced benefits can outweigh these losses at scale (>0.5–1 GW), site-level impacts on livelihoods are real and require targeted mitigation.

1. Background

This section sets the context for the Socio-Economic Impact Study on Offshore Wind (OFW) development in San Miguel Bay and the Guimaras Strait. This section will explain the report's purpose and objectives, summarises the policy and market context, describes the two study areas, lists the study's core assumptions and scenarios, and outlines the analytical approach and intended users of the report.

Purpose and Objectives

GWEC commissioned this study to conduct a strategic assessment of the socio-economic benefits and coastal development opportunities linked to OFW development in the Philippines. Specifically, this study was produced to quantify local economic benefits, identify industrial readiness, and propose development strategies that align with national energy and regional development goals. The study shall cover the following:

- Quantify area-specific economic impacts (direct, indirect, and induced) for construction (DevEx/CapEx) and operation (OpEx) phases.
- Map policy, governance, and permitting landscape; identify gaps affecting equitable benefit sharing; and propose implementation options.
- Benchmark international experience and derive lessons applicable to the Philippines.
- Deliver actionable recommendations and implementation options (local employment and skills pathways, supply-chain measures, fisheries mitigation/compensation, and benefit-sharing mechanisms) prepared for stakeholder validation and policy dialogue.

Policy and Sector Context

Offshore wind is an emerging industry in the Philippines, supported by growing policy attention, ongoing permitting processes, and active pre-development efforts across several regions. GWEC's 2024 Philippine Offshore Wind Supply Chain Study identified strong potential in key sectors like ship-building, steel, cement, aggregates, maritime services, and skilled labor. However, it also highlighted moderate readiness in areas, specifically in manufacturing, workforce training, and enabling infrastructure. These findings underscore the need to localise value creation, support coastal development, and ensure early and meaningful community participation so that OFW can deliver broad-based economic benefits.

Globally, OFW cost and market dynamics (CapEx, OpEx, LCOE, and financing assumptions) will shape local economic outcomes; the study will rely on the latest sector benchmarks adapted to the Philippine context to estimate economic effects.

Study Areas

The study focuses on San Miguel Bay and the Guimaras Strait, which were selected due to their advanced stage of offshore wind project development and the presence of leading developers with multiple Offshore Wind Energy Service Contracts (OWESCs).In San Miguel Bay, the Department of Energy (DOE) and the Philippine Ports Authority (PPA) have identified Pambuhan Port in Camarines Norte as a key site for offshore wind development, representing a government-driven approach grounded in national planning and early public investment. In contrast, Pulupandan Port along the Guimaras Strait is taking shape as a privately driven logistics hub, backed by supportive local governments. These examples demonstrate two different but mutually reinforcing pathways for advancing infrastructure and stimulating regional growth.

These contracts have a validity of 25 years and provide permission to holders to conduct exploration, development and/or utilisation of offshore wind resources in assigned project areas. Given that both sites span a wide number of local government units (LGUs), the scope was refined to concentrate on priority locations On behalf of GWEC, NIRAS conducted a review of the geographies of San Miguel Bay and the Guimaras Strait and identified four LGUs in the project's Stakeholder Engagement Plan (SEP).

San Miguel Bay

Bicol Peninsula, Region V

San Miguel Bay is characterised by predominantly rural coastal communities with livelihoods that are heavily dependent on small-scale fisheries and agriculture. The broader Bicol Region (Region V) had roughly 6 million people in the 2024 Philippine Statistics Office census, with Camarines Sur the region's largest province (about 2 million in 2024). Two municipal-level locations as study areas are identified: Mercedes (Camarines Norte) and Calabanga (Camarines Sur). Mercedes has a municipal population of 53,702, while Calabanga has approximately 88,918. The report's stakeholder engagement plan identifies these LGUs as priority locations because of existing project activity and logistics interest.

a. Key economic characteristics

Small-scale and commercial fisheries, aquaculture, and agriculture dominate local economic activity. Local service sectors (retail, transport, small mechanical repairs and boat services) supply these primary produces and are likely to see induced demand from construction and O&M spending. The potential for local port upgrades and fabrication work means construction and manufacturing linages could increase if foundation fabrication, port staging, or onshore balance-of-plant work localises; Chapter 2 discusses regional manufacturing and fisheries mapping in more detail.

Mercedes has been identified in project planning as a candidate host for an offshore wind port, which makes it a focal point for expected logistics and O&M activity. This designation increases the municipality's exposure to both benefits of port investments and distributional risks if port-related jobs and procurement attach to non-local suppliers.

b. Subnational and regional renewable energy policy context

The Bicol Regional Development Plan positions the region to pursue productive investments, including measures that enable energy infrastructure and coastal resource management. Renewable energy and energy infrastructure are included as enabling sectors for regional development, creating a policy environment that is receptive to OFW-enabled port and grid investments.

Regional planning emphasis on infrastructure and port competitiveness supports proposals for port upgrades and workforce training. However, while explicit subnational legislation specific to offshore wind remains nascent; national permitting and policy instruments will continue to heavily shape site outcomes. National guidance on OFW permitting and regional coordination is summarised in the DOE OFW guidance and related administrative orders.

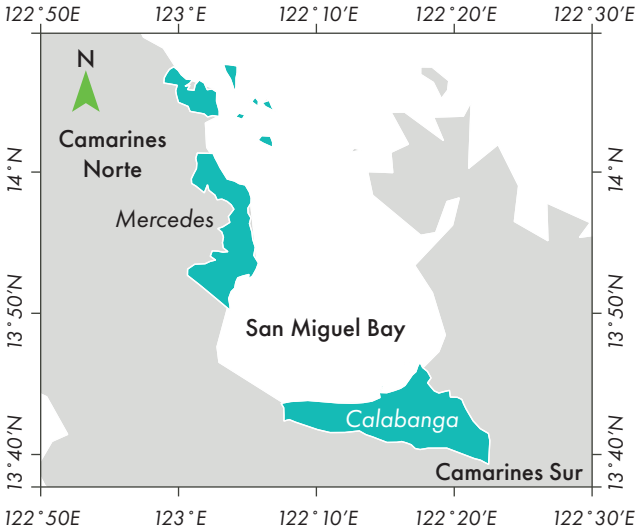


Figure 1.1
San Miguel Bay Study Area Map

San Miguel Bay Sunset
©MarvinBikolano | Wikimedia

Guimaras Strait

Western Visayas, Region VI

The Guimaras Strait is an important fishing corridor and island economy, supporting fisheries, and tourism. Western Visayas (Region VI) recorded about 5 million people in the 2024 census; the region contains multiple medium and large urban centers that function as logistics and industrial hubs for the strait. Two focal LGUs in the study are Iloilo City and Pulupandan. Iloilo City acts as the nearest major urban, industrial and maritime services hub to the strait. Pulupandan is a smaller municipality (around 31,942 people in 2024) with a functioning RoRo and multipurpose port and close access to Bacolod metropolitan services.

a. Key economic characteristics

The Guimaras Strait economy depends on fisheries, aquaculture, tourism, sugar and agri-processing, transport services, and local ship repair/shipbuilding capacity concentrated in regional ports, according to the Region's Development Plan. These sectors are key channels for induced consumption effects from project wagers and for upstream procurement.

The strait is an important fishing corridor. Construction activities can create localised disruptions to fishing effort and landing patterns; those disruption pathways and local adaptive capacity determine how quickly household incomes recompose.

b. Subnational and regional renewable energy policy context

Western Visayas has an explicit renewable energy and energy transition focus in its Regional Development Plan. The region has been active in regional renewable energy coordination through the Regional Development Council and has run capacity-building and stakeholder engagements on renewables and local energy planning. That regional momentum is supportive of OFW development, especially where regional port, training, and industrial policy align.

The Department of Energy Visayas Field Office has documented multiple OFW service contracts and predevelopment activity in the Iloilo/Panay area. National policy instruments, including the Power Development Plan 2023-2050 and the DOE's OFW permitting guidance and the Environmental Management Bureau administrative orders for OFW consent pathways, together create the principal legal and regulatory framework that regional actor must implement. This combination of national rules and active regional planning produces momentum but also requires explicit LGU coordination to capture local benefits.

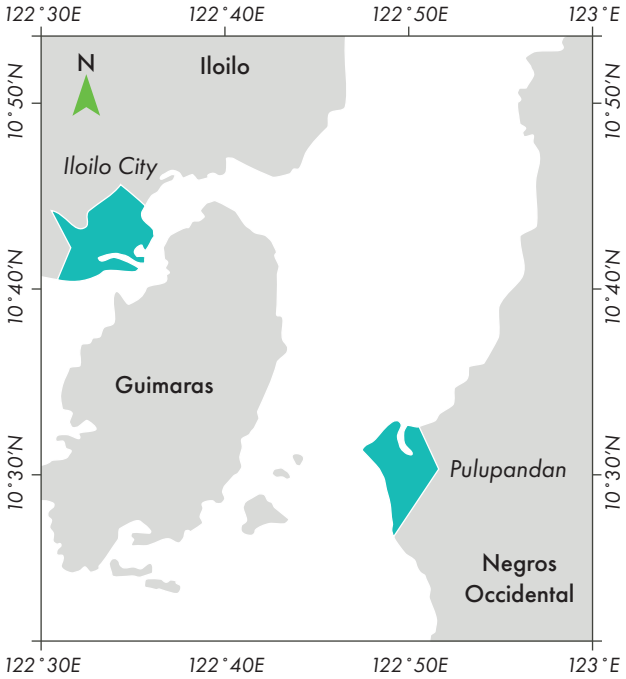


Figure 1.2

Guimaras Strait Study Area Map

Key Study Assumptions and Scenarios

To ensure transparency and comparability, the study adopts the planning assumptions and defines build-out scenarios, parameters given by GWEC:

- San Miguel Bay: Starting point of 1 GW, with optional scale-up scenarios to evaluate broader development potential.
- Guimaras Strait: Initial 500 MW deployment, with modeled scenarios for progressive expansion.

The analysis has modelled both CapEx/DevEx (construction and installation) and OpEx (operation and maintenance) and produced scenarios stretching into the early 2030s. Cost and performance inputs were drawn from global and regional benchmarks (World Bank, IEA, GWEC, NREL, WindEurope, IRENA) and adjusted for Philippines-specific factors (e.g. CapEx/OpEx split, local logistics and port needs).

Analytical Approach

The study applies a mixed quantitative-qualitative approach:

1. **Area-adapted input-output (IO) economic analysis.** An area-specific IO model was developed/adapted for the Bicol Peninsula (San Miguel Bay) and Western Visayas (Guimaras Strait) to estimate direct, indirect, and induced impacts on output, employment, gross value added (GVA) and local GDP. The study has combined national IO tables, provincial product accounts, and sectoral data to create regional IO tables for the analysis.

2. **CapEx/OpEx disaggregation and scenario design.** Project spending was disaggregated into standard cost components (turbines, foundation, cables, installation, offshore substations, etc.), mapped to IO sectors, and used to estimate sectoral multiplier effects under alternative local content and procurement assumptions.

3. **Policy, governance, and benefit-sharing analysis.** The study has mapped the national and local legal and institutional landscape, identified gaps and practical options for community benefit mechanisms, and assessed implementation feasibility.

4. **International benchmarking and lessons learned.** Case studies from the offshore wind markets of Taiwan, Japan, Mainland China, and the UK were examined to assess approaches to auctions and local content, fishery impact management, financing models, and community engagement mechanisms that could be adapted for the Philippine context.

5. **Stakeholder validation and recommendations.** Draft findings and options will be prepared for a stakeholder workshop. The final report will document assumptions, data sources, and limitations to support transparent policy dialogue.

Offshore Wind Development Socio-economic Benefit Sharing Study

Renewable energy projects, such as offshore wind, can generate a wide range of benefits across different sectors and governance levels (e.g., central and local). The concept of benefit sharing seeks to distribute financial and non-financial gains in a manner that supports socio-economic development and enhances overall project outcomes at both national and local scales. While the benefit sharing mechanism may intersect with other development impact measures such as compensation, resettlement assistance, and livelihood restoration, it represents a broader framework as described in Figure 1.3.

Benefit sharing aims to deliver positive outcomes that extend beyond the directly affected stakeholders and can generate sustained value throughout the project lifecycle. It is not necessarily given in accordance with the loss or suspension of certain rights (compensation), nor the recovery from the previous condition due to the impact of development (livelihood restoration), although sometimes the compensation and livelihood restoration can bring the benefit-sharing effect. Benefit sharing extends beyond compensation for losses incurred by stakeholders; it encompasses the creation of new value and contributions arising from responsible, high-quality project development.

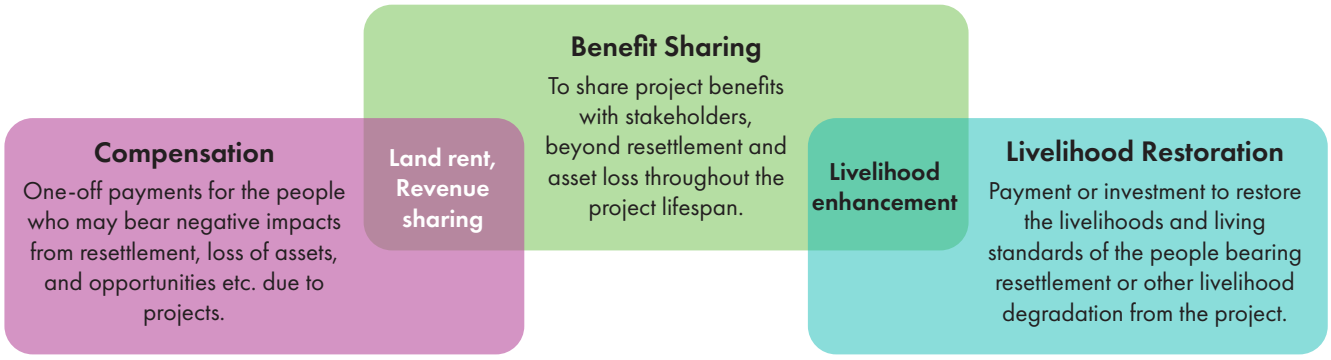


Figure 1.3
Concept of benefit sharing and relevant mitigation approaches

Renewable technologies operate in varied local contexts, requiring tailored benefit-sharing frameworks. Governments and developers must consider multiple factors when designing these mechanisms. Offshore wind projects deliver clean energy, strengthen energy security, and drive economic growth. Benefit sharing can be direct or indirect, through infrastructure upgrades, livelihood support, and inclusive community development.

This study examines the outcomes of benefit sharing at the national scale and identifies potential approaches for implementation at the regional and local levels. This is particularly relevant as offshore wind policy and regulation in the Philippines remain at a nascent stage, with local-level frameworks still under development and discussion.

The World Bank (2022)[1] categorises the socio-economic benefits of renewable energy development into three principal groups and these categories are indicated in Table 1. A wide range of benefit-sharing approaches has been documented in the literature; Table 1 presents a comparative overview of these approaches across multiple scales and analytical perspectives. Building on this review, Table 2 synthesises the main benefit-sharing perspectives and the corresponding mechanisms identified. In this study, potential benefit-sharing opportunities at both national and local levels are examined in Chapter 3. This analysis provides an assessment and sets of recommendations tailored to the Philippine policy and market context, with the aim of maximising the socio-economic gains associated with offshore wind development.

Table 1.1

Categorisation and identification of benefit sharing from literature review

World Bank (2022): A Sure Path to Renewable Energy: Maximizing Socioeconomic Benefits Triggered by Renewables	IFC (2019): Local Benefit Sharing in Large-Scale Wind and Solar Projects	Clean Energy Council (2019): A Guide to Benefit Sharing Options for Renewable Energy Projects	CAN Europe (2024): Community Engagement and Fair Benefit Sharing of Renewable Energy Projects
• Participation in the renewable energy value chain • Local development • Gender equality and social inclusion	• Revenue sharing and shared ownership • Public services and infrastructure • Skills and livelihood • Environmental stewardship	• Neighborhood benefit programmes • Sponsorship, grant, and legacy initiatives • Local jobs, training, and procurement • Employee volunteerism • Innovative products • Innovative financing and co-ownership • Beyond compliance-level	• Benefit Funds • Payout • In-kind benefits (non-financial) • Shared ownership • Benefits for the local economy

[1] World Bank. 2022. "A Sure Path to Renewable Energy: Maximizing Socioeconomic Benefits Triggered by Renewables. Washington, DC: World Bank"

Table 1.2

Socio-economic benefit-sharing opportunity

Perspectives	Type	Approach	Outcomes	
			Economic	Social
Participation in renewable energy value chain	Revenue sharing	• Recurring grant and support • Community payments/fund	• Renewable energy supply • Economic growth • Business opportunity • Energy security	• Job opportunities • Affordable clean energy • Engagement in energy transition • Livelihood development
	Shared ownership	• Share ownership • Engagement in development		
	Renewable energy supply	• Preferential electricity rates and discounts		
	Local content	• Procurement from local supply chain • Cooperation and capacity building with the local government		
Local development	Payout and investment	• Community payments/fund • Supporting initiative and programme	• Infrastructure development, renewal, and maintenance • Industry development • Local investment	• Job opportunities • Skill cultivation and education opportunities • Local community connection and relationship building
	Public services and infrastructure	• Basic service provision • Grid, port, and road investment and procurement		
	Training and skill cultivation	• Local employee and business partner • Institutional capacity building		
Gender equality and social inclusion	Local livelihoods improvement	• Community payment/fund • Basic service provision • Community wellbeing and amenity Improvements • Alternative skills and livelihoods	• Inclusive infrastructure and investment development • Reallocation of the resources	• Skill cultivation and education opportunities • Local community connection and relationship building
Environmental sustainability	Environmental stewardship	• Environmental enhancements • Low-carbon local development	• Green economic development	• Public health • Environmental improvement

Effective realisation of benefit sharing relies on policy design and collective engagement across key stakeholders. The benefit-sharing mechanism can be understood through its types of benefits, flows, and allocation mechanisms. Figure 1.4 identifies the main perspectives on benefit sharing mechanisms and brief of the main factors as follows. The four factors interconnect with each other and bring the expected positive impact and value as benefit-sharing from renewable development.

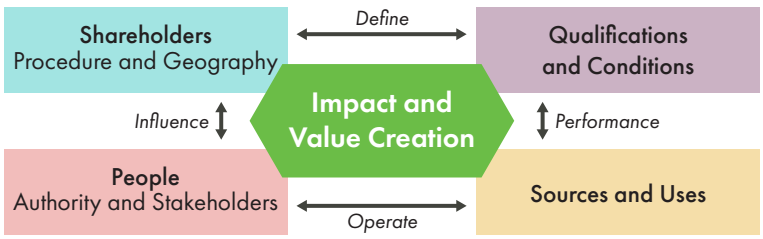


Figure 1.4

Benefit-sharing key factors and structure

1. Procedure and geography

Renewable project development includes the following stages/phases: (1) Pre-Development, (2) Development, (3) Construction, (4) Operation & maintenance (O&M), (5) Decommissioning; it is crucial to identify the development roadmap of the Philippines to understand the potential benefit-sharing through the development stages. The roadmap is defined by the development targets, timeline, and procedure of permit and consent requirements for OFW development, and we can further analyse stakeholders' responsibilities and rights throughout the development cycle.

Apart from the timeframe, the geographic scope can be defined and discussed at different scales. The contribution and impact of benefit sharing from project development can vary across national, regional, and local levels, as well as from place to place. For example, improving national energy security may come at the expense of local fishermen's incomes across different fishing zones, with impacts varying by fishing method. It is generally believed that fishing will be difficult during the construction phase; however, fishing can be carried out in areas outside the wind farm core during the operational phase, and turbine foundations may attract and support fish populations. In addition, economic growth driven by energy development can increase agricultural and fisheries incomes through improved national economic conditions. Thus, it is also important to identify the types and impact level of the benefits, and who are the beneficiaries of the different benefit-sharing mechanisms.

2. Government authority and stakeholders

The authorities design policies and implement regulations. Under the permitting and consenting regulations, reviewers and decision makers may implement different types and levels of benefit sharing across various phases of development. For example, some early benefits can be achieved through early developer engagement with local stakeholders, in line with permitting requirements; whilst O&M compliance will bring different levels of benefit sharing for the local community. It is crucial to identify the roles of different stakeholders in the benefit-sharing mechanisms and the inclusivity of related tools. Offshore wind development is commonly under special supervision and priority from the authorities, who can be decision makers for both creation and allocation of the benefits. The allocation and distribution of stakeholders at different levels, sectors, or backgrounds may depend on the strategy and planning of the authorities.

Social license to operate (SLTO) is commonly raised in the context of large-scale developments. Offshore wind development is confronted with complex social consenting processes that require proper stakeholder engagement. Benefit sharing is crucial for securing social consent and establishing a long-term, mutually beneficial relationship with local communities.

3. **Qualification and conditions**

Policy and regulations set conditions to govern relevant interests, as different stakeholders will have different interests based on their situations and actions. Benefit sharing is delivered with conditions. For example, an opportunity for fisherfolks to take on environmental survey or construction support services, which would require additional training before joining. Some investments would require the local supply chain to have a certain level of investment partnership with the project owner, and establishing a community benefit fund (CBF) would require efforts from relevant stakeholders to secure agreement and manage the funds to expand the potential benefits.

4. **Sources and uses**

In line with the policy or the developer's commitment to project development, the resources for benefit sharing can come from various sources, each with its own rationale for management. Some of the common sources include (1) project capital, (2) government support, (3) co-investment from the stakeholders, (4) project income, (5) existing non-financial assets, and (6) ripple effects from the development. Different sources rely on the specific mechanism and authority for the set-up and management, which can bring different impacts throughout the project lifespan.

Different beneficiaries have varying powers and knowledge to utilise the benefits more effectively. The use of benefits is relevant to fair distribution and sustainable management, aiming to create long-term, and profound value for stakeholders.

5. **Impact and value**

As discussed, benefit sharing can be delivered in different forms of impact and values that have various quantitative units or qualitative outputs. For the quantitative impacts, it can be simply understood by the amount of the output; however, the qualitative output may be challenging to have a unified standard for comparison. For example, economic growth can be valued in GDP/GVA, as well as the job creation in full-time equivalent (FTE), whilst the impact of local community relationships, and livelihood improvement would be hard to have a clear valuation. However, the quantitative and qualitative outputs should be recognised for the analysis of benefit sharing and follow-up policy recommendations.

Primary Stakeholders and Intended Users

This report is designed to inform a range of audience and decision points:

- National government agencies (DOE, DENR, BFAR and other government agencies) responsible for permitting, consenting, and sector policy.
- Provincial and municipal governments and coastal LGUs in Region V and Region VI.
- Fishing communities, fisheries associations, and other coastal stakeholders.
- Developers, investors, and supply-chain actors assessing the business case for OFW in the Philippines.
- Development partners and financiers supporting policy interventions, permitting frameworks or local economic development programmes.

2.

Local Economic Impact of Offshore Wind

Background and Objectives

The Philippines is at a critical juncture in its energy transition, with offshore wind (OFW) regarded as a key pillar for achieving national renewable energy targets and promoting economic development. To assess the specific benefits of this emerging industry, this study focuses on two areas with high development potential: San Miguel Bay and the Guimaras Strait.

The objective of this task is to demonstrate the local economic potential of OFW by using an area-specific input-output (IO) model to estimate its effects on jobs, income, value-added, and supply chain activity, based on buildout scenarios in San Miguel Bay (1 GW) and the Guimaras Strait (500MW).

In responding to the objective, we proposed the following key activities to retrieve all the necessary information required to quantify the local economic impact of these two cases:

a. Estimating the total capital and operating expenditures (CapEx and OpEx) for the 1 GW and 500 MW buildouts using the most recent Philippine-specific OFW cost benchmarks.

b. Disaggregate CapEx and OpEx by major components (e.g., turbines, foundations, vessels, substations, port logistics) using supply chain structures from GWEC's Philippine OFW Supply Chain Study.

c. Develop or adapt an area-specific input-output (IO) model to reflect the regional economies of San Miguel Bay and Guimaras Strait.

Estimate:

- Gross Value Added (GVA) and contribution to local GDP.
- Direct, indirect, and induced employment across relevant sectors and project phases
- Supply chain multiplier effects, adjusted for local content assumptions and regional liquidity.
- Document and justify all assumptions, data sources, and limitations.
- The following sections will detail our research methodology, model construction, scenario assumptions, and analysis results.

Methodology

Methodological Framework

This assessment applies a tailored Regional Input–Output (RIO) modelling framework to estimate the macroeconomic impacts of offshore wind development scenarios in San Miguel Bay and Guimaras Strait. The input–output (I–O) approach is widely used in regional economic analysis to capture inter-sectoral linkages and economic spillover effects associated with infrastructure investments. Given the extensive data requirements of a fully surveyed Interregional Input–Output (IRIO) model, this study adopts a Multi-Region Input–Output (MRIO) approach, which disaggregates the national input–output table into regional components. Interregional trade flows are estimated using established econometric techniques such as Location Quotients and RAS balancing, allowing the model to approximate regional economic conditions while remaining feasible within available data and resource constraints. This framework provides a robust and practical approach to assessing regional economic impacts while maintaining analytical rigor. Further details on the modelling approach and assumptions are provided in **Appendix D**.

Model Inputs: Cost Estimation and Sectoral Mapping

To drive the IO model, the wind farm's life-cycle costs must be translated into final demand for the corresponding economic sectors.

1. **Cost Estimation (CapEx & OpEx Estimation)**
   This study utilizes the most recent Philippine-specific OFW cost benchmarks to estimate Development (DevEx), Capital (CapEx), and Operating (OpEx) expenditures for the 1 GW and 500 MW scenarios. Cost data are drawn from the World Bank (2022), ADB (2024), and NREL (2022, 2024), with adjustments based on latest market intelligence. These figures have been synthesized and adjusted based on the applicability of each report to the Philippine context, as presented in Table 2.1.

Table 2.1

Cost assumptions for LCOE in 2028

Cost Component	Unit	Value (Philippines-fixed bottom)
Project development	• US$/MW	185,452
Total DevEx	• US$/MW	185,452
Turbine	• US$/MW	1,439,371
Foundation	• US$/MW	594,413
Array cable	• US$/MW	44,345
Installation of generating assets	• US$/MW	338,253
Offshore substation	• US$/MW	135,230
Export cables	• US$/MW	78,069
Installation of transmission assets	• US$/MW	215,402
Total CapEx	• US$/MW	2,845,083
Operation and planned maintenance	• US$/MW/yr	45,905
Unplanned service	• US$/MW/yr	31,480
Total OpEx	• US$/MW/yr	77,385

Reference: World Bank (2022), ADB (2024), NREL (2022, 2024)

2. **Sectoral Mapping**
   This is a critical step, which allocates the economic output to different sectors, thus we can understand the impact/contribution on different industries from wind farm development. As the 2018 IO table contains only a single "Electricity" sector, we first disaggregate it into "Conventional Electricity" and "Offshore Wind Power". Next, referencing the GWEC supply chain study, each detailed cost component from Table 2.1 (e.g., consulting services, foundation EPC, turbine supply) is systematically mapped to the 240-sector and 16-sector IO industry classifications (See **Appendix E** for detailed mapping).

Scenario Design and Assumptions

To assess the potential economic benefits of offshore wind, this study designs two analytical scenarios. The objective is to compare the effects of different "Local Content" levels on the economies of San Miguel Bay (Region V) and Guimaras Strait (Region VI), and to observe spillover effects.

Baseline Assumptions

To ensure a clear comparison, scenarios are built upon a common set of "baseline assumptions" that remain constant throughout the analysis:

- **Installed Capacity & Timeline:** San Miguel Bay (Region V) is assumed to have 1 GW operational by 2029 and 2 GW (cumulative) by 2031. Guimaras Strait (Region VI) is assumed to have 500 MW by 2030 and 1.5 GW (cumulative) by 2032.
- **Cost Basis:** The structures for total Capital (CapEx) and Operating Expenditures (OpEx) follow the World Bank (2022) "fixed" cost benchmarks (as shown in Table 2.1) .
- **Economic Parameters:** The exchange rate is 1 USD = 56.8182 PHP.
- **Economic effects during operation & maintenance (O&M) phase:**

To account for the economic effects during the operation phase, we do not consider OpEx directly; instead, the supply chain effect will be generated from the production of OFW. Therefore, we use the annual energy production (AEP) 3,205 MWh/MW/yr from World Bank (2022), with the FIT rate 12 pesos/kWh, to account the production of these two OFW projects. Since the OFW sector has been established in our regional input-output table, the production of two OFWs will contribute to upstream sectors through their input demand.

Interference in the fishing sector during the construction phase: According to related studies, most concluded that OFW development projects may be challenging for the fishing sector (e.g., Scheld et al., 2022; Mackinson et al., 2006). Because the impacts depend heavily on fishing methods and related supporting policies, fishing ground routes, etc., it is very difficult to estimate localized effects. Thus, we assume that only fishing activities around the offshore sites will be interfered with and cannot be performed during the construction phase, and they can return to fishing with different fishing sites or approaches in the operational phase. According to NREL (2020), an average OFW built 70 km offshore till 2025, where the grounds belong to the commercial fisheries and marine municipal fisheries mentioned by SEAFDEC (2025). Therefore, we use the shares of the production value of these two fisheries in the regional total fisheries production value to calculate the impact on the local fishing industry.

Table 2.2

Shares of production value of commercial fisheries and marine municipal fisheries (%)

Regions	Subsectors	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Region V Bicol Region	Share of fisheries of agriculture	20.66	18.96	18.71	19.19	21.11	19.47	15.99	16.43	10.57	10.95
	Share of commercial and marine municipal fisheries of fisheries	82.78	83.13	81.64	79.75	77.85	82.81	80.57	90.83	90.30	92.98
Region VI Western Visayas	Share of fisheries of agriculture	19.44	19.01	17.73	17.77	19.77	17.81	18.76	20.90	19.43	19.58
	Share of commercial and marine municipal fisheries of fisheries	64.83	63.85	61.57	55.37	53.06	54.10	56.99	70.06	57.96	54.94

Reference: Philippine Statistics Authority

Key Variable for scenarios: Local Content

The primary variable defining the scenarios is the level of "local content," reflecting the depth of participation from the Philippine domestic supply chain, which can generate domestic economic output and bringing trickle-down economics. The local content percentages for Scenario 1 and 2 two scenarios are quoted from the World Bank's report (2022) for the "Low Growth" and "High Growth" projections in the Philippines (detailed in Table 2.4). In addition, the base case (Scenario 0) is designed to account for prevailing market conditions, industry readiness, and developer perspectives, presenting the baseline without the offshore wind industry in the Philippines.

- Scenario 0 (S0): Base case
  This is the case, according to the current market, informed by observations and input from existing OFW-related stakeholders. This case shows the situation without the Philippines' offshore wind industry and the domestic economic value generated from partial engagement in operations, electricity sales, and consumption.
- Scenario 1 (S1): Low Local Content
  This scenario is a viable path where it represents situations based on data, and assumptions, without major changes in policy, technology, or market conditions. In the scenario, the items that are more likely to be delivered by local supply chains are included.
- **Scenario 2 (S2): Medium Local Content**
  This scenario assumes a significant increase in local content, driven explicitly by "foundation fabrication," though WTG and offshore construction remain reliant on international suppliers. This includes more items that the domestic industries can develop the capability to produce.

Table 2.3

Local content assumptions

Items		Scenario 0 (%)			Scenario 1 (%)			Scenario 2 (%)		
		2028	2032	2036	2028	2032	2036	2028	2032	2036
Project Development		0	5	5	60	70	70	60	70	70
Turbine	Nacelle, rotor, and assembly	0	0	0	0	0	0	0	0	0
	Blades	0	0	0	0	0	0	0	0	0
	Tower	0	0	0	0	0	0	0	25	25
Balance of plant	Foundation supply	0	0	0	0	0	0	0	40	40
	Array cable supply	0	0	0	0	0	0	0	0	0
	Export cable supply	0	0	0	0	0	0	0	0	0
	Onshore and offshore substation supply	0	0	0	5	5	5	5	40	40
Installation and Commissioning	Turbine installation	0	0	0	15	35	35	15	35	35
	Foundation installation	0	0	0	1	35	35	15	35	35
	Array cable installation	0	0	0	5	5	5	5	5	5
	Export cable installation	0	0	0	5	5	5	5	5	5
	Onshore and offshore substation installation	0	0	0	45	45	45	45	45	45
Operation and maintenance	Wind farm operation	0	10	20	80	80	80	80	80	80
	Turbine maintenance and service	0	10	20	25	40	40	40	55	55
	Foundation maintenance and service	0	10	20	40	75	75	60	75	75
	Subsea cable maintenance and service	0	10	20	30	30	30	30	30	30
	Substation maintenance and service	0	20	20	60	60	60	60	60	60
Decommissioning			0	5	5	50	50	35	50	50
Total local content %		0	4	6	21	20	22	25	36	34

Source: World Bank (2022), table 12.1 on page 121., NIRAS intelligence

In the IO model analysis, only the localized portion of the investment (local procurement) is treated as the final demand injection during the construction phase. During the operation phase, electricity output at full installed capacity (adjusted for the capacity factor) is used to generate supply chain effects.

The assumptions used for Scenarios 0, 1, and 2 in this study are outlined as follows:

Table 2.4

Scenario Assumption

Items	Scenario 0 Base case	Scenario 1 Low localisation	Scenario 2 Medium localisation
Capacity & timeline	• **San Miguel Bay:** 1 GW installed by 2029, 2 GW installed by 2031 (cumulatively) • **Guimaras Strait:** 500MW installed by 2030, 1.5 GW installed by 2032 (cumulative) • Each project takes 3 years to complete the construction and installation, and operates for 30 years		
Cost	Following the "fixed" cost element of the World Bank (2022) and ADB, NREL information, shown as in Table 2.1		
Main local content	Following existing market conditions and local industry preparation and estimates.	Following Low Growth" scenario of World Bank (2022)	Following "High Growth" scenario of World Bank (2022)
FIT rate	12 pesos/kWh		
Exchange rate	Exchange rate on 8 Sep. is 1 USD=56.8182 PHP		
Scenario description	Given the current lack of offshore wind industries in the Philippines, nearly no local businesses can commit to urgent development timeline. The development and construction will rely heavily on international supply chains. Furthermore, without sufficient investment, the operational phase will only generate a small portion of local economic output.	The new investment and improvement are limited, and local content only has low-hanging fruits, such as the onshore construction EPC and supporting works. The part of development planning and most of the consenting work can be done by the local workforce.	Foundation and components fabrication leads to a significant increase in local content, but all the WTG and offshore construction rely on international suppliers. Local suppliers do cable protection works.

Estimation of Economic Impact

Macroeconomic contribution

The investments in the two offshore wind (OFW) projects are projected to have a significant positive impact on the country's GDP, as shown in Figure 2.1. During the project's lifespan from 2027 to 2062 the two sites may contribute an average of 73 to 80 billion pesos in additional GDP annually, provided that local supply chains are developed as in S1 and S2. This scale is equivalent to 0.28%-0.30% of the Philippines' 2024 GDP. This total contribution comprises of the San Miguel Bay project (43 to 47 billion pesos annually) and the Guimaras Strait project (30 to 33 billion pesos annually). In the base case (S0), where local supply chain engagement is very limited, green energy generation and partial O&M contributions can contribute 8.6 billion pesos annually to the GDP.

As Figure 2.1 shows, the scale of GDP contribution is directly correlated with the investment in the local supply chain. In S0, an investment of about PHP 8 billion may realize an annual GDP contribution of PHP 8.5 billion, mainly from the O&M phase. In S1, PHP 75 billion (left side) in local investment yields an average annual GDP of PHP 73 billion (right side). When S2 assumes the localization of 'foundation fabrication', the local investment increases significantly to PHP 122 billion, which in turn directly lifts the average annual GDP contribution to PHP 80 billion. This demonstrates that the degree of localization is a key driver determining the overall economic benefits.

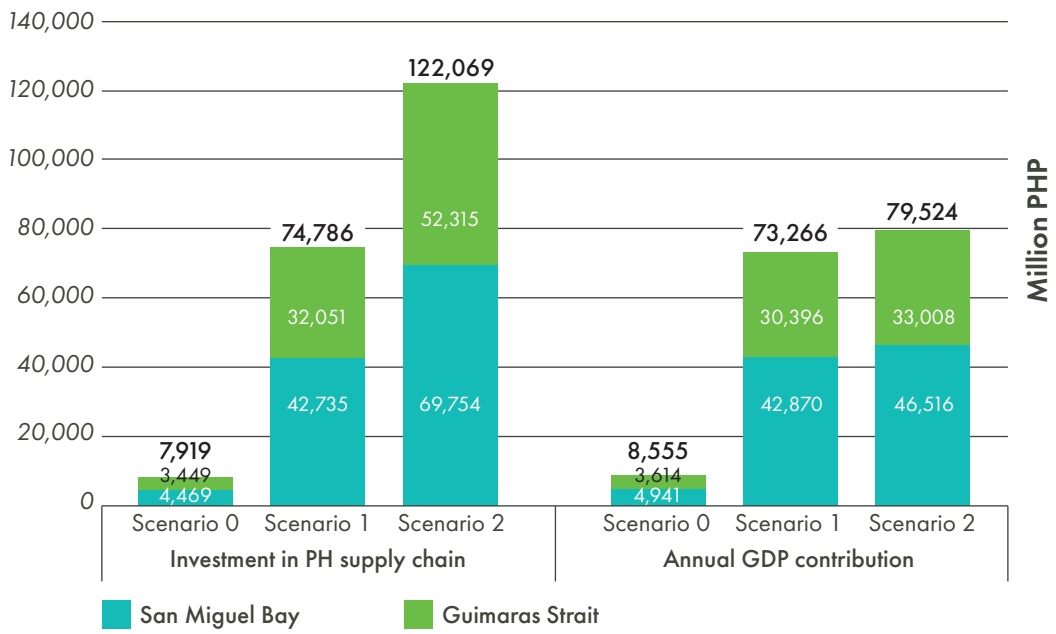


Figure 2.1

Investment and GDP contribution from OFW development

The project's economic impact is not uniform; it varies significantly throughout the project lifecycle. The main GDP contributions for different sectors under the scenarios are shown in Figure 2.2 to Figure 2.4. S0 shows very limited economic impact during the development and construction phase, and the GDP contribution mainly comes from commercial and livelihood impacts; while S1 and S2 show significant economic impact from the new OFW-related industries.

- **Construction Phase:** The project's economic impact rises rapidly during the Construction phase (approx. 2027-2032). This stage is characterized by high capital expenditure (CapEx) on the supply chain and generates broader industry benefits. The GDP contribution increases as additional capacity and investment grow. Similarly, job creation also reaches its peak during this phase, reflecting the high labor demand of construction activities.
- **Operation & Maintenance (O&M) Phase:** After the construction period, the project enters the 30-year O&M phase. During this time, the economic contribution is primarily driven by the OFW generation output, shifting to a long-term, stable benefit. Although the actual output is consistent, the reported GDP contribution value will have stable decline with 3% discount rate factor. In terms of employment, FTE (full-time equivalent) numbers drop from the construction peak but remain at a lower, stable level throughout the O&M period.
- **Decommissioning Phase:** At the end of the project lifecycle (approx. 2059-2062), the project enters the Decommissioning phase. As the capacity is retired, the associated economic impacts (both GDP and employment) will reduce accordingly.

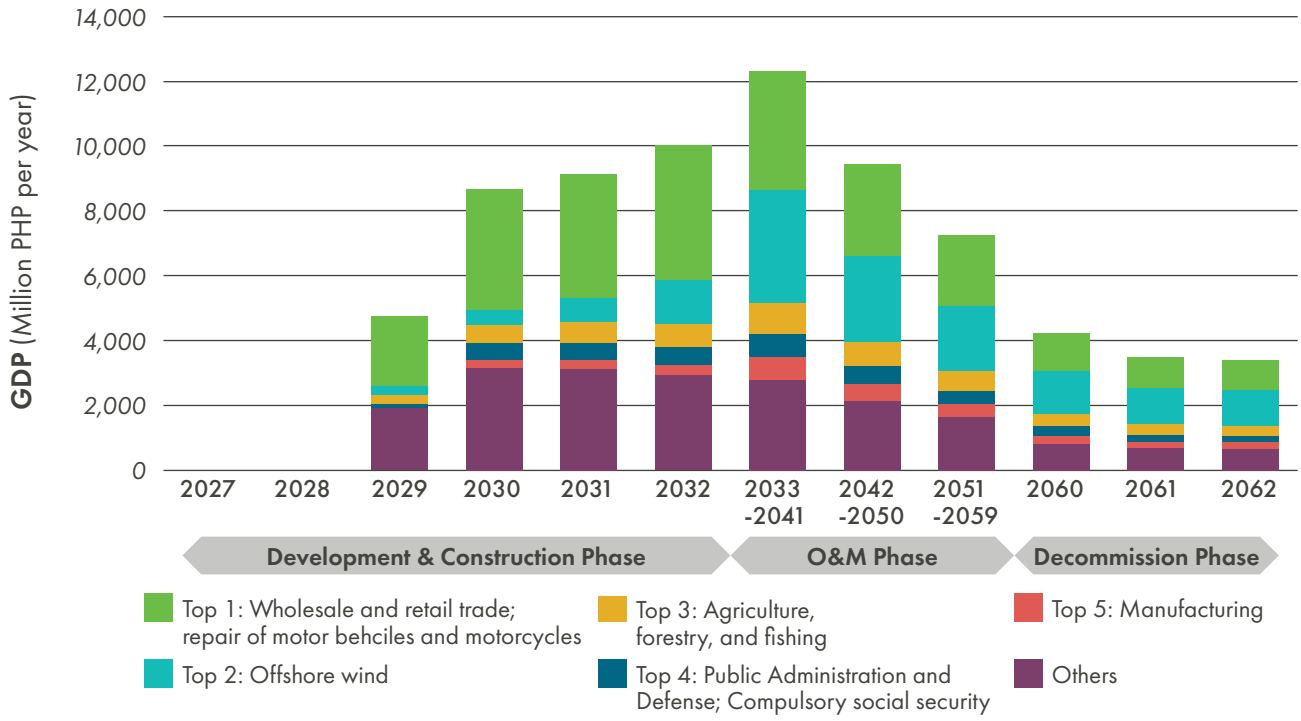


Figure 2.2

Roadmap of National GDP contribution (Scenario 0)

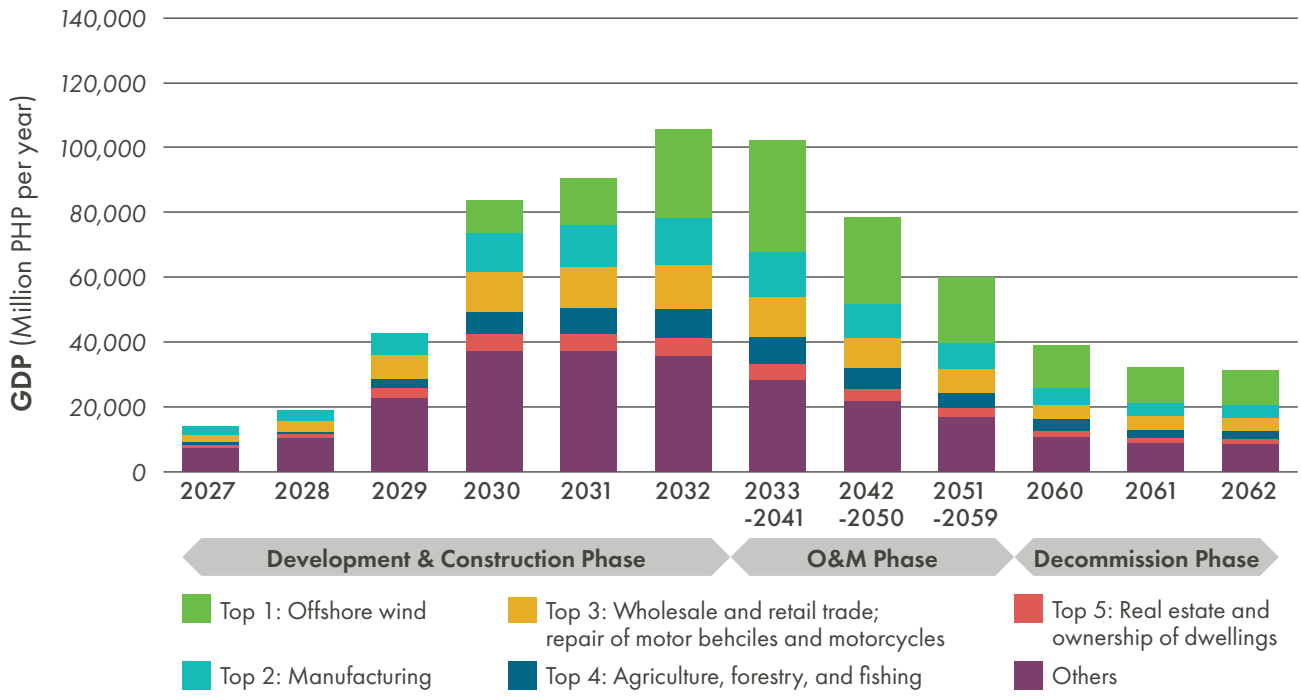


Figure 2.3

Roadmap of National GDP contribution (Scenario 1)

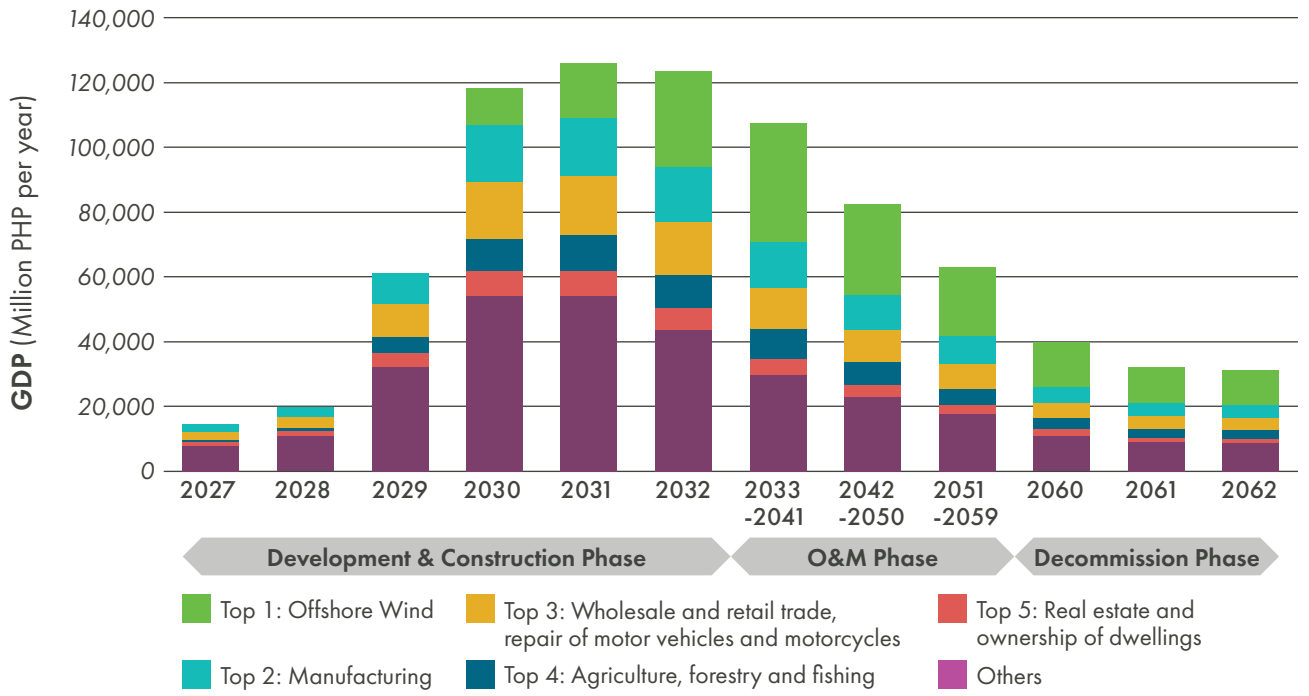


Figure 2.4

Roadmap of National GDP contribution (Scenario 2)

Overall, Figure 2.1, Figure 2.3, and Figure 2.4 jointly depict the macroeconomic scale of the OFW projects and their dynamic outputs over time. This GDP contribution is driven by the investment in the local supply chain, as shown in Figure 2.1, and will, as discussed in subsequent sections, create significant local job opportunities nationwide.

- **Construction Phase:** The economic contribution is driven by investments into existing sectors, primarily manufacturing and construction.
- **Operation & Maintenance (O&M) Phase:** he contribution structure fundamentally shifts. The main body of the contribution comes from the OFW sector itself, which represents the sector's revenue from electricity sales. The other sectors stacked on top (manufacturing, wholesale, and agriculture) represent the indirect (supply chain) and induced (employee consumption) benefits generated by OFW operations.

Comparing the two charts, "Manufacturing" in Figure 2.4 (S2) is visibly larger during the construction phase than in Figure 2.3 (S1). According to Table 2.5, S1 (low localisation) develops only "low-hanging fruits", whereas S2 (medium localisation) assumes the development of local fabrication of foundation and other components. The fabrication of foundations is classified under the manufacturing sector in the IO model. Therefore, the substantial growth of "Manufacturing" in Table 2.4 is the direct economic benefit realized from this specific localisation assumption.

This finding is corroborated by the data shown in Figure 2.1. The reason S2 contributes more to GDP than S1 is precisely because the investment in the Philippine supply chain is significantly higher. The additional PHP 47 billion investment is flowing primarily into the manufacturing sector, as visualized in Figure 2.4. Following the IO analysis measure, the economic benefit from OFW investment will bring positive growth across industries, and the larger sector (agriculture and fishery) will naturally receive more benefits. The economic benefits of the OFW projects are not distributed evenly across all industries, following the local content development, some of the sectors will enjoy further growth from offshore wind development. As shown in Figure 2.5, the GDP contribution is mainly concentrated in the OFW (05) sector itself, Manufacturing (03), Wholesale and retail trade (07), and Agriculture, forestry, and fishing (01).

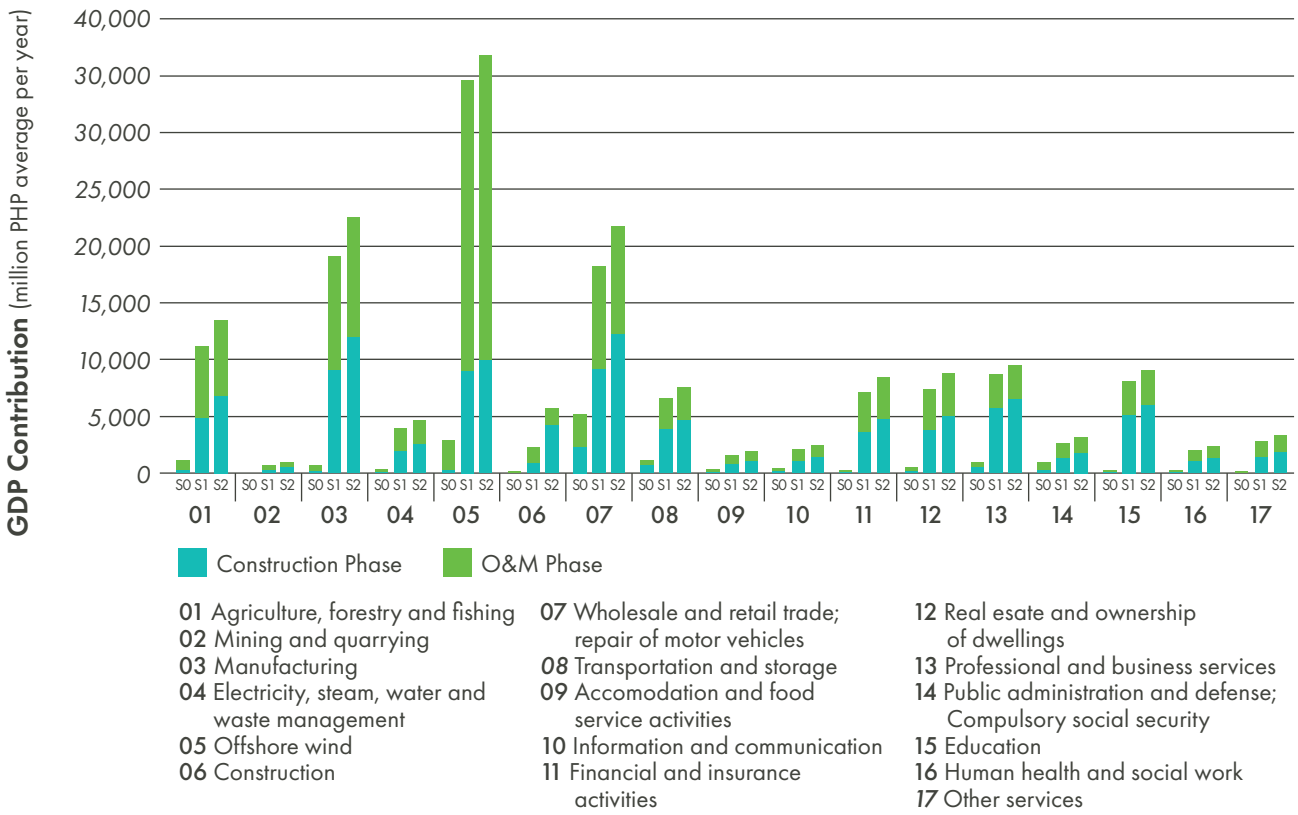


Figure 2.5

GDP contribution by sector (average per year)

The timing of contributions differs by sector, reflecting the project's varying input across its life cycle:

- **Construction-Driven Sectors:** For Manufacturing (03) and Wholesale and retail trade (07), approximately half of their GDP benefits come from the construction phase. This is primarily because most CapEx is allocated to manufacturing and transportation, and manufacturing has tighter connections (multipliers) with other sectors.
- **Operations-Driven Sector:** For the Offshore wind (05) sector, over 65% of its own GDP is generated during the operation and maintenance (O&M) phase. Its contribution is larger than other sectors because OFW continuously generates power during the operation phase, supporting the demand of almost all sectors and households, a mechanism that ensures its revenue and output value.

In analyzing the agriculture sector (01), this study specifically considers the interference of construction activities on fisheries. Despite challenges in fisheries during the construction phase, the overall GDP of the agriculture sector still increases significantly. This is because the positive Induced Effect driven by expanding household income and consumption (e.g., demand for agricultural products) from project-related wages is larger than the challenges in fisheries. The OFW capacity scale must be sufficiently large (suggested >0.5GW, with >1GW being more appropriate) to ensure the positive induced effect is large enough to outweigh challenges in fisheries.

Between the two scenarios, the economic benefits of S2 are not only larger in aggregate but also permeate nearly all key sectors at a higher level than S1. It is also clear that under the business as usual, i.e., S0, the economic contributions are very rare compared to the two other scenarios. The economic implications for key sectors are as follows:

1. **Direct Benefits in Manufacturing:** The most significant difference in Figure 2.5 is Manufacturing particularly during the "Construction Phase", where S2's contribution is substantially higher than S1's. This precisely reflects the core assumption of S2: the localisation of "foundation and the components fabrication", which successfully translates the additional local investment directly into manufacturing GDP.
2. **Localisation Value in Operations (offshore wind sector):** In the offshore wind sector, where the contribution is dominated by the "O&M phase", S2's contribution (approx. 37 billion PHP) is also higher than S1's (approx. 34 billion PHP). This is attributed to S2's higher localisation assumptions for O&M items (such as turbine and foundation maintenance in Table 2.4), allowing it to capture more local GDP value over the 30-year operational lifespan.
3. **Multiplier Effects in Induced Sectors**: This enhanced benefit also spills over into induced sectors. For "Agriculture" and "Wholesale and retail trade," S2's contributions are comprehensively higher than S1's. This reveals the stronger multiplier effect of S2: the higher initial investment in "Manufacturing" (Direct Effect) generates more labor income, which in turn translates into a more powerful "Induced Effect". This effect drives greater GDP growth in these labor-intensive sectors that are the primary recipients of household consumption.

Impact Drivers and Mechanisms

The GDP contributions (Figure 2.1) and their timeline (Figure 2.3) outlined in previous sections are driven by three economic effects: Direct, Indirect, and Induced. S0 shows economic impact with virtually no local supply chain involvement, limited to power generation and energy consumption. Conversely, Scenarios 1 and 2 show the significant direct, indirect, and induced economic benefits that can be generated by varying levels of local engagement. This gives a clear picture of the strong potential economic benefits from OFW development.

- **Direct Effect:** This is the most immediate economic activity. During the construction phase, this refers to the investment in project development (DevEx) and capital expenditure (CapEx), such as the funds spent on consulting and construction. During the operation phase, this refers to the value of the energy produced by the OFW farm.

  The size of this local direct effect, which acts as the final demand in the economic model, is determined by the local content assumptions. While the total project investment is estimated at 503 billion pesos, only the locally spent portion—estimated at 75 to 122 billion pesos—is treated as the local final demand that generates domestic multiplier effects.

  S2 (High localisation) assumes a larger portion of this initial spending stays within the country, resulting in a larger direct local demand. This larger initial injection is what, in turn, creates larger indirect and induced effects, leading to a higher overall GDP.

- **Indirect Effect:** This effect stems from the demand generated by the wind industry on its upstream supply chain. When the project company procures components or services (e.g., from manufacturing or transportation), the economic activity generated by these suppliers, and their own suppliers in turn, constitutes an indirect effect.

- **Induced Effect (The Key Growth Engine):** This is the most significant driver identified in this study, particularly for employment. Its mechanism operates as follows:

  - ◊ **Salary Generation:** Direct and indirect activities create jobs, which in turn generate 17.7 to 19.4 billion pesos in annual labor salaries for induced activities.

  - ◊ **Stimulating Consumption:** Households that receive this income spend it on daily consumption, such as purchasing agricultural goods, retail products, and services.

  - ◊ **Boosting the Broader Economy:** This additional household spending "induces" a new round of economic activity and employment demand throughout the economy, especially in sectors like agriculture and services.

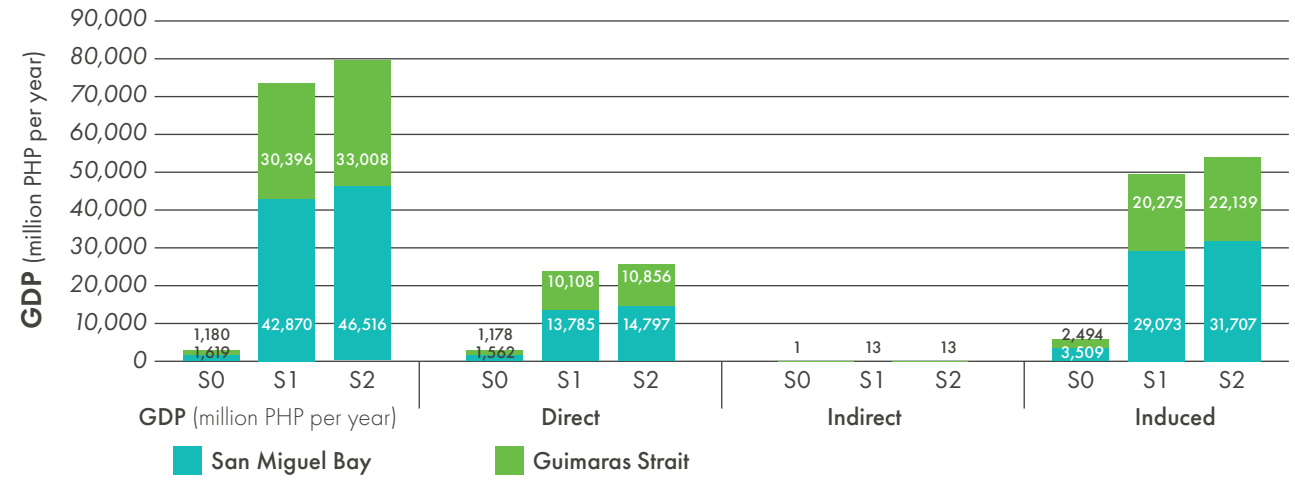


Figure 2.6

National GDP contribution (by effects)

In summary, while the initial "investment" (CapEx) is the catalyst that ignites economic benefits (Direct effect), the key mechanism that expands and embeds this benefit deep into the broader economy especially in creating mass employment is the subsequent salary-driven "Induced Effect."

Employment Contribution and Effects

In addition to its contribution to GDP, offshore wind investment will also generate significant local employment. Depending on the localization scenario, an estimated 225,887 to 244,448 full-time equivalent (FTE) jobs will be created annually on average from Scenarios 1 and 2. These new jobs are expected to generate approximately 22 to 24 billion pesos in annual labor salaries. The analysis shows the significant economic outputs from wind farm development. S1 demonstrates that moderate local supply chain engagement can create considerable job opportunities and wages for local labor compared to the base case, further increasing induced jobs and incomes in the Philippines.

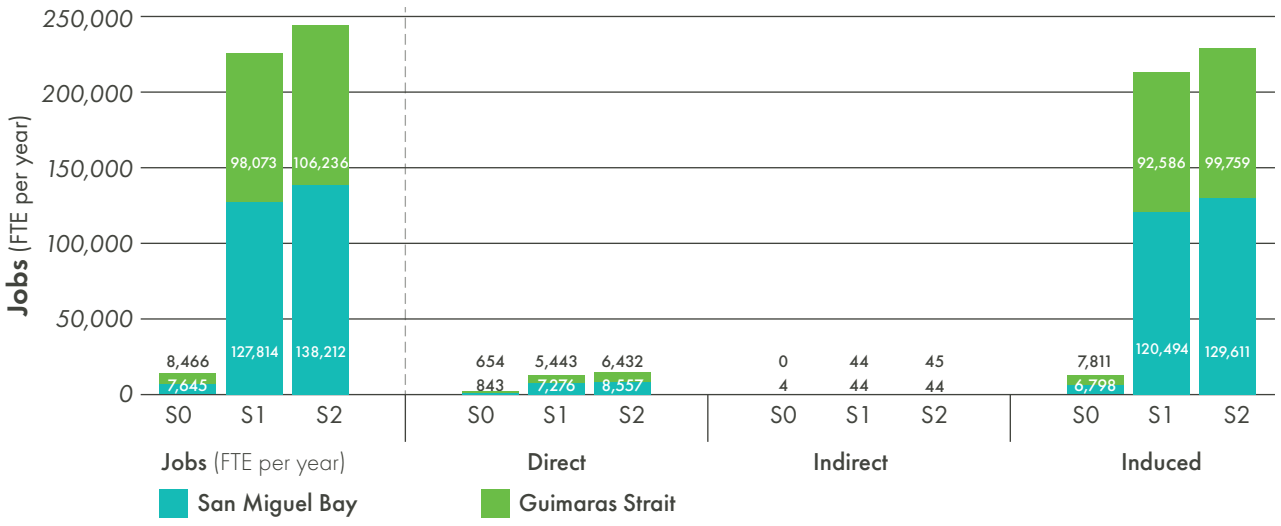


Figure 2.7

Total Job Creation in yearly average (by effects)

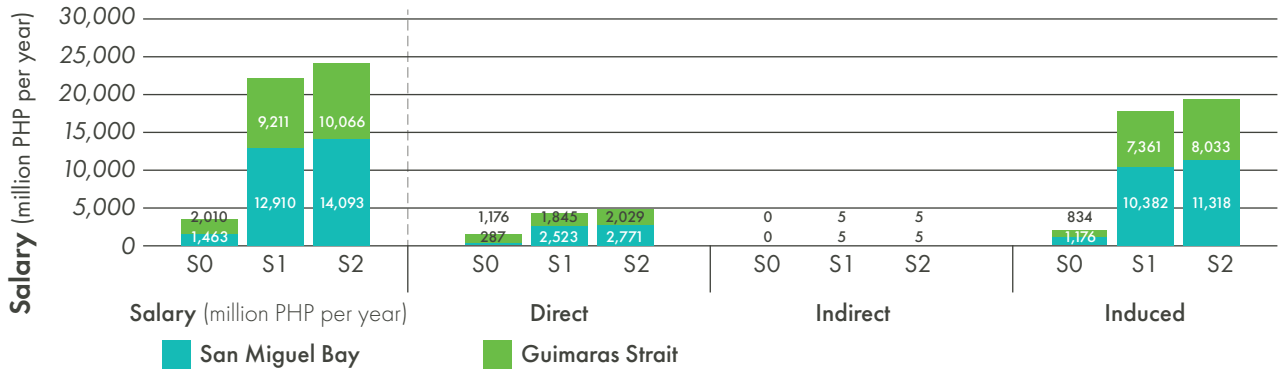


Figure 2.8

The impacts on Salary in yearly average (by effects)

The primary driver of job creation is the induced effect, which significantly outweighs the combined direct and indirect effects. As shown in Figure 2.7, the direct and indirect effects are minimal, while the induced effect accounts for over 90% of all job creation. This mechanism operates as an "economic ripple": The project (Direct) and its supply chain (Indirect) pay salaries to employees (as shown in Figure 2.8), and those employees then spend that income on household consumption (e.g., food, retail goods, and transportation). It is this "secondary spending" that creates a massive number of jobs in other sectors. Therefore, the largest job beneficiaries are not high-tech manufacturing, but rather labor-intensive sectors. This is clearly corroborated by Figure 2.9 and Figure 2.10, which show the unequal distribution of job opportunities across industries, with Agriculture, Wholesale and retail trade, and Transportation comprising the bulk of employment.

As shown in Figure 2.9 and Figure 2.10, the job creation lifecycle corresponds to the GDP roadmap (Figure 2.3, Figure 2.4), peaking during the construction phase (2027-2032). Notably, the charts reveal that this construction-phase peak is not led by manufacturing or construction, but rather by Agriculture, Wholesale and retail, and Transportation. This finding strongly corroborates the report's central thesis: job creation is driven primarily by the Induced Effect. This is because these labor-intensive sectors are the primary recipients of household consumption (the 'secondary spending'). As the project enters the O&M phase, employment in these induced sectors declines to a stable plateau.

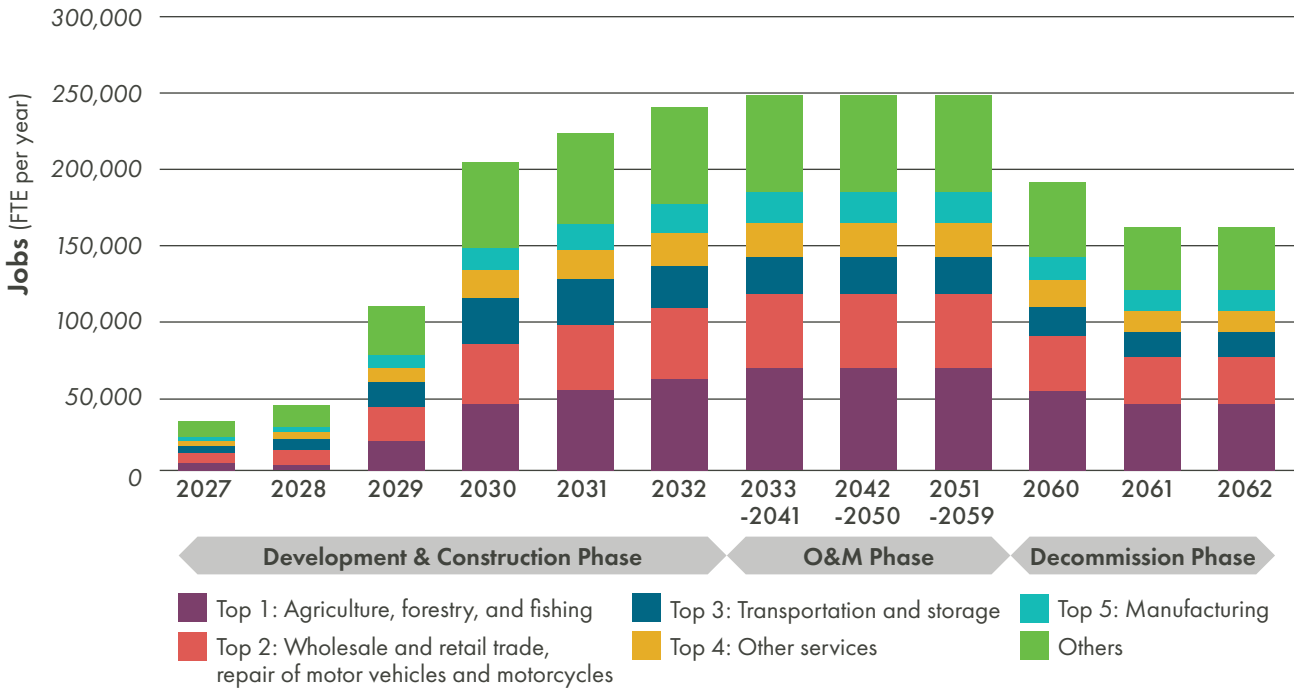


Figure 2.9

Total Job Creation by OFW lifecycle (Scenario 1)

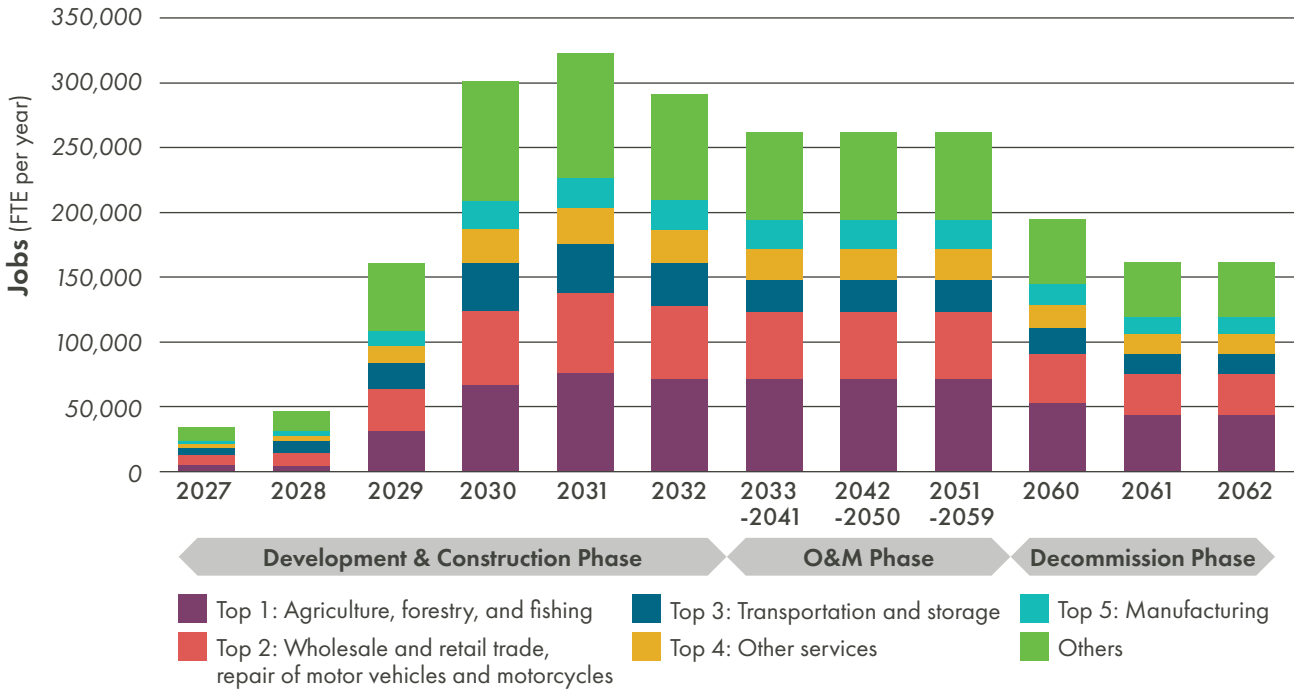


Figure 2.10

Total Job Creation by OFW lifecycle (Scenario 2)

In terms of total employment figures (Figure 2.7), the strong pull of the induced effect, combined with the labor-intensive nature of certain industries, results in the top three job-creating sectors being Agriculture, Wholesale and retail trade, and Transportation. As discussed in the previous section on impact mechanisms, these sectors benefit from the "ripple effect" of increased local investment, employment, and salaries originating from the offshore wind industry. Notably, the Manufacturing sector also benefits from the significant capital investment during the construction phase, which drives its own employment growth.

In comparison of the two scenarios, S2 (High localisation) shows significantly higher employment during the construction phase than S1 (Low localisation), a difference that is particularly evident in the Manufacturing sector. This is also corroborated by, which shows the difference in the Direct Effect on jobs and salaries based on the degree of localization. Because the Direct Effect in S2 is stronger, it further amplifies the Induced Effect.

In comparison of the two scenarios, S2 (High localisation) shows significantly higher employment during the construction phase than S1 (Low localisation), a difference that is particularly evident in the Manufacturing sector. The "Direct Effect" data in Figure 2.7 and Figure 2.8 shows that the "Direct Effect" creates **14,989 FTEs**, compared to S1's **12,719 FTE**s. More importantly, these additional manufacturing jobs generate **4.8 billion PHP** in direct salaries, surpassing S1's **4.4 billion PHP**. Because the Direct Effect in S2 is stronger (providing a larger initial salary base), it further amplifies the Induced Effect, leading to a comprehensive increase in total employment benefits.

Furthermore, both charts clearly show a significant drop in total employment once the construction phase ends (around 2033), as the direct, indirect, and induced effects tied to construction cease. Policymakers should therefore pay close attention to the impact of this "construction-to-O&M" transition on local employment, designing supporting measures to mitigate potential industrial and labor market shocks.

Interregional liquidity

In the case of 1GW OFW in San Miguel Bay (Region V), 36% of the total (national) output contribution will come from the other regions. In the case of 500MW OFW development in Guimaras Strait (Region VI), the liquidity is 22%. These results suggest that the linkage between the supply chain in Region V and other regions is tighter than that in Region VI; therefore, OFW investment in Region V will benefit regions outside of Region VI more than investment in Region VI.

Conclusion for Economic Outcomes

This study aimed to quantify the local economic impact of developing offshore wind (OFW) in San Miguel Bay and the Guimaras Strait, utilizing a Regional Input-Output (RIO) model. The analysis confirms that these two project areas will make a significant positive contribution to the Philippine national economy in both low- and high-local-content scenarios. During the project period (2027–2062), they are projected to generate an average of 75 to 122 billion pesos in additional GDP annually and create 225,887 to 244,448 full-time equivalent (FTE) jobs.

The study found that the scale of this economic benefit is highly dependent on the depth of domestic supply chain participation. A "High localisation" scenario (S2), successfully driving the local production of key components such as "foundation fabrication", is estimated to generate an additional 47 billion pesos in local investment compared to a "Low localisation" scenario (S1) that relies only on " High-impact, low-effort actions".

Regarding employment, the analysis shows that the largest job benefits do not stem from the wind farm investment itself (Direct effect) but from the wage-driven (Induced Effect). This mechanism accounts for over 56% of all job creation and operates as an "economic ripple": the 22 to 24 billion pesos in annual labor salaries paid by the projects are spent by households on daily consumption. This, in turn, makes labor-intensive sectors such as agriculture and wholesale/retail trade the largest beneficiaries of job growth, rather than high-tech manufacturing.

Furthermore, despite the promising outlook, these benefits are accompanied by significant economic trade-offs and challenges that require careful policy responses. First, while the construction phase is expected to bring challenges local fisheries, the model results indicate that the positive induced effects from OFW are large enough to offset this impact, enabling the agriculture sector to achieve a net benefit. Second, economic activity is not constant. As shown in Figure 2.9, a significant "employment transition" gap exists between the labor-intensive "construction peak" and the subsequent 30-year "O&M plateau". This gap poses a clear challenge for future labor market management.

Finally, regarding the interregional distribution of benefits, investment in San Miguel Bay (Region V) exhibits a higher economic liquidity rate (36% during construction), suggesting tighter linkages with the "national-level" supply chain. Conversely, investment in Guimaras Strait (Region VI) has a lower liquidity rate (22%), enabling more benefits to be concentrated within the "regional-level" economy.

In conclusion, offshore wind provides a powerful economic catalyst for the Philippines. However, maximizing its benefits will depend on the government's ability to strategically promote local content, manage the labor transition, and balance national versus regional development objectives. Further detailed analysis is warranted for supporting policies, such as the design of incentive mechanisms for localisation ratios within wind power auction frameworks.

The summary of GDP contribution and job creation effects comparison of the three scenarios is shown in Figure 2.11.

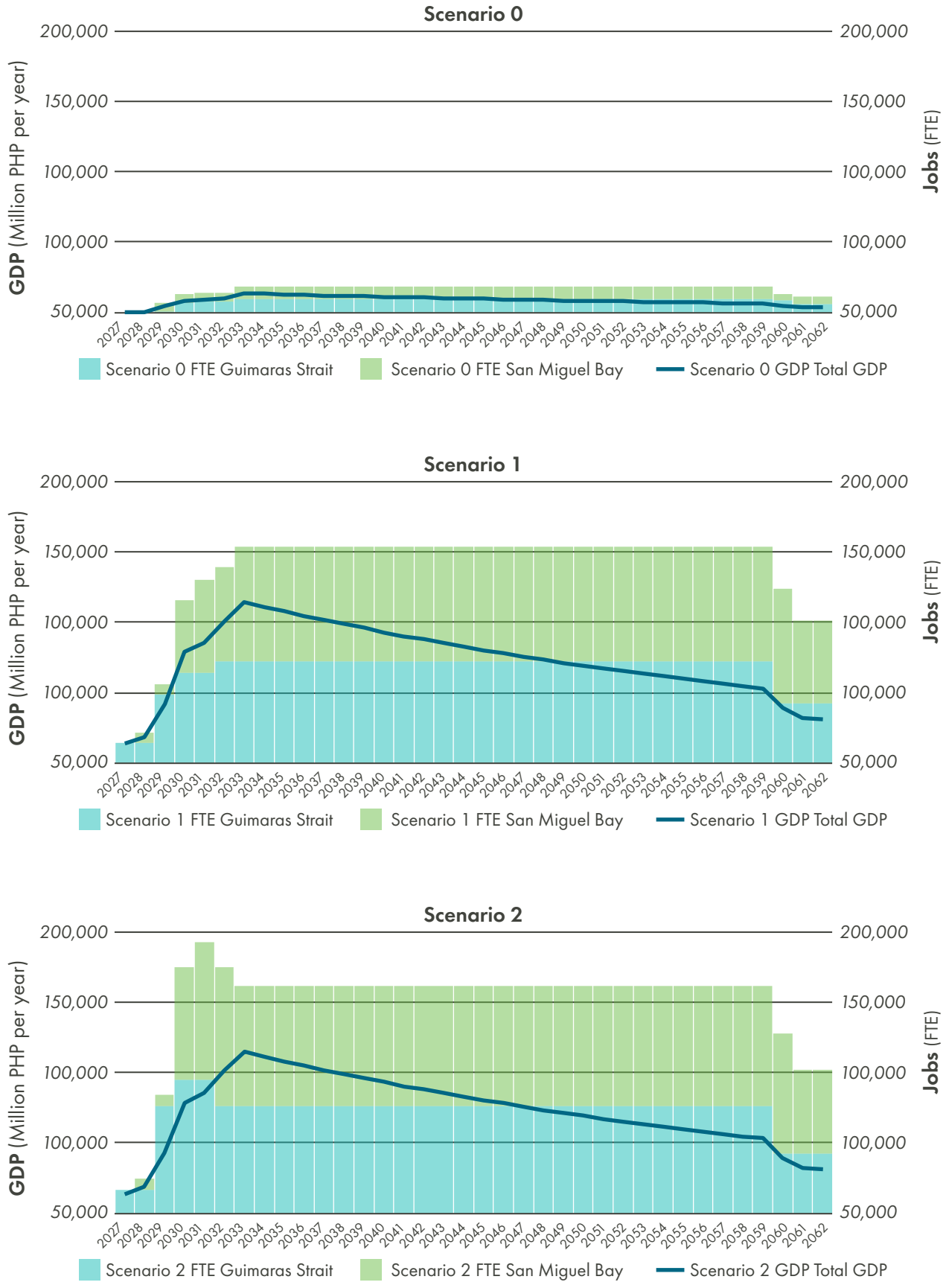


Figure 2.11

Summary comparison of economic output (by Scenarios)

3.

Assessment of Frameworks and Mechanisms for Fair Distribution

Existing Policies and Governance Structures

The Philippines is entering a critical phase in the development of its offshore wind (OFW), which holds an estimated potential capacity of over 178 gigawatts (GW) according to the World Bank (2022). Beyond its significant role in advancing the country's renewable energy transition and climate change mitigation efforts, OFW presents a wide range of socio-economic opportunities, most notably in job creation, livelihood diversification, infrastructure development, and coastal resilience.

The discussion below outlines the key socio-economic benefits of OFW development and the national policies and legal frameworks that support their implementation.

Defining Socio-economic Benefits in the Philippine OFW Context

Socio-economic benefits of OFW encompass a wide range of outcomes that improve community wellbeing, local economies, and resilience. In the Philippine context, there are focus objectives regarding OFW benefit sharing, which are pivotal to facilitate national and societal development, including:

- **Job creation and workforce development:** Establishment of a skilled labor force for OFW design, manufacturing, installation, operation, and maintenance.
- **Livelihood enhancement and diversification:** Providing alternative and supplementary income sources for coastal and fishing communities.
- **Energy access and affordability:** Promoting energy equity by increasing renewable energy supply and stabilising electricity prices.
- **Coastal protection and regeneration:** Encouraging integration of OFW projects with marine spatial planning and habitat restoration.
- **Community infrastructure and services:** Channeling OFW investments into local facilities such as ports, access roads, training centers, and coastal defenses.

These benefits can be amplified through structured benefit-sharing mechanisms, participatory planning, and the inclusion of vulnerable groups, such as women, indigenous peoples, and fisherfolks.

Review of National Legal and Institutional Frameworks

The Philippines has existing regulations that provide mechanisms for generating, distributing, and sustaining socio-economic benefits from renewable energy projects. However, these frameworks originally designed for onshore or conventional energy projects require harmonisation and adaptation to align with the emerging offshore wind (OFW) sector, particularly in terms of benefit-sharing, local content, and community participation.

The following key laws and policies directly or indirectly support the socio-economic outcomes of OFW development, including specific financial allocations, benefit mechanisms, and institutional responsibilities:

a. Renewable Energy Act of 2008 (Republic Act No. 9513)

RA 9513 provides the primary framework for promoting renewable energy (RE) development in the Philippines. It aims to accelerate the exploration, development, and utilisation of RE sources, encourage private sector investment, and ensure that the benefits of RE development reach local communities through fiscal incentives and public funding mechanisms. The following are the benefits under this policy:

- Income Tax Holiday (ITH): RE developers are entitled to 7 years of ITH, followed by a 10% corporate tax rate (instead of 30%) after the holiday period.
- Duty-Free Importation of RE Equipment: Importation of machinery, equipment, materials, and parts used exclusively for RE facilities is exempted from customs duties and value-added tax.
- Accelerated Depreciation and Zero-Rated VAT: Developers can recover capital faster and maintain project competitiveness.

These incentives lower the upfront capital cost of offshore wind investments, enhancing project bankability and attracting international developers. The fiscal savings can translate into higher local content, technology transfer, and reinvestment in community programmes.

Another benefit indicated in the RE Act of 2008 is the establishment of the Renewable Energy Trust Fund (RETF). The RETF was created to provide sustainable financial support for the promotion, development, and widespread utilisation of renewable energy (RE) in the Philippines. Its main purpose is to ensure that revenues and contributions from renewable energy projects and related activities are reinvested into initiatives that expand access to clean energy, build local capacity, and strengthen community participation particularly in rural and off-grid areas. The fund is administered by the Department of Energy and sourced from:

- Proceeds from emission trading and penalties.
- Donations, endowments, and grants.
- Income from privatisation of government energy assets.

While RA 9513 does not specify a percentage share, DOE guidelines indicate that up to 20% of RETF allocations may be used for community-based RE programmes, including OFW-related livelihood initiatives and local electrification projects in coastal areas.

The law encourages local manufacturing, fabrication, and supply chain participation to enhance technology transfer and employment. Offshore wind projects can localise fabrication (e.g., monopiles, towers, secondary steel), supporting job creation in coastal industrial zones.

b. Environmental Impact Statement (EIS) Law (Presidential Decree 1586)

The EIS System ensures that all major projects undergo environmental and social assessment to prevent and mitigate adverse impacts. The policy includes the following guidelines:

- Requires an Environmental Impact Assessment (EIA) to identify project-induced effects on communities, employment, livelihoods, and health.
- Mandates public consultations and stakeholder engagement, ensuring that local communities participate in the decision-making process.
- Requires Environmental Management Plans (EMP) that include social mitigation and community development components, typically equivalent to 0.5%–1% of total project cost for large-scale energy projects.

The EIS process serves as a regulatory entry point for integrating socio-economic programmes, such as livelihood restoration, job training, and health services, into project design and budgeting.

c. Indigenous Peoples' Rights Act of 1997 (Republic Act No. 8371)

RA 8371 (IPRA) recognises and promotes the rights of Indigenous Cultural Communities (ICCs)/Indigenous Peoples (IPs) to their ancestral domains, resources, and self-determination. The following provisions are included in this Act:

- Requires Free, Prior, and Informed Consent (FPIC) for projects located within or affecting ancestral domains.
- The FPIC process typically results in a Memorandum of Agreement (MOA) between the developer and the affected IP community, which includes:
    - ◊ Royalty or benefit-sharing commitments equivalent to at least 1% of the gross project revenue, or as negotiated.
    - ◊ Community development programmes, such as livelihood support, scholarships, and healthcare.
    - ◊ Employment and skills training opportunities for IP members.

IPRA ensures equitable benefit distribution and protection of IP rights. The FPIC-derived fund supports community welfare and promotes inclusive participation in renewable energy transitions.

d. Philippine Fisheries Code (RA 8550 as amended by RA 10654)

Philippine Fisheries Code ensures the conservation, management, and sustainably utilise fisheries and aquatic resources, while protecting the rights of subsistence fishers. The following guidelines are included:

- Requires developers operating in municipal waters or Exclusive Economic Zones (EEZ) to secure clearances from Bureau of Fisheries and Aquatic Resources (BFAR) and concerned LGUs.
- Mandates Livelihood Assistance or Compensation for displaced fisherfolks affected by coastal or marine projects.
- Encourages developers to support alternative livelihood programmes for fishers, e.g. aquaculture, seaweed farming, or coastal tourism.

Under BFAR guidelines, compensation is generally 1.5 to 2 times the annual average income of affected fishing households during construction and operation periods.

e. Climate Change Act of 2009 (RA 9729) and People's Survival Fund (RA 10174)

These laws institutionalise climate change adaptation and financing mechanisms at the national and local levels.

- The People's Survival Fund (PSF) is a PHP 1 billion annual allocation under the National Treasury to support local government adaptation programmes.
- Eligible projects include:
  - ◊ Climate-resilient livelihood diversification.
  - ◊ Ecosystem-based coastal protection.
  - ◊ Disaster risk reduction infrastructure.
  - ◊ Early warning systems and capacity-building.
- OFW projects can co-finance or align with PSF-funded local initiatives, particularly in coastal adaptation and resilience-building.
- Through the PSF, OFW host LGUs may access or leverage national adaptation financing to complement developer-led social investments, thereby reinforcing climate and livelihood resilience in project areas.

f. Energy Regulations No. 1-94 (ER 1-94, DOE Circular 2000-03-004 and 2020-06-0013)

ER 1-94 ensures that host communities directly benefit from energy resource development by allocating a portion of generation revenues to local development programmes.

- Under amended ER 1-94 programme, energy-generating companies are required to remit PHP 0.03 (3 cents) per kilowatt-hour (kWh) of electricity sales to DOE, which is then allocated as follows:
- Indicative Community Benefit:
  - ◊ For a 500 MW OFW project operating at a 40% capacity factor, annual generation would be approximately 1.75 billion kWh.
  - ◊ Applying the ER 1-94 rate: 0.03 × 1.75 billion kWh = 52.5 million per year allocated to host communities.
- Distribution:
  - ◊ 26.25 million – Electrification Fund (50%)
  - ◊ 13.125 million – Development and Livelihood Fund (25%)
  - ◊ 13.125 million – Reforestation, watershed management, health, and/or environment enhancement fund (25%)

Institutional Roles and Coordination

The successful realisation of socio-economic benefits of OFW in the Philippines depends heavily on institutional coordination across multiple government agencies and policy domains. Given the cross-sectoral nature of OFW spanning energy, environment, labor, industry, and local governance, an integrated institutional framework is critical to ensure efficient implementation, equitable benefit distribution, and regulatory coherence.

Each national agency plays a distinct yet interdependent role in enabling OFW development and maximising its socio-economic benefits:

- **Department of Energy (DOE):** DOE serves as the lead implementing and regulatory authority for renewable energy development under the Renewable Energy Act of 2008 (RA 9513). It is responsible for issuing service contracts, developing OFW regulatory frameworks, and integrating socio-economic benefit objectives into policy instruments such as the Philippine Energy Plan (PEP 2023–2050) and National Renewable Energy Program (NREP). DOE's leadership is also essential in developing a National Offshore Wind Benefit-Sharing Framework, modelled after Energy Regulation No. 1-94 (ER 1-94), to guide how host communities and LGUs can benefit from OFW projects through electrification, livelihood, and development funds.
- **Department of Environment and Natural Resources (DENR):** DENR is mandated to oversee the Environmental Impact Assessment (EIA) process under PD 1586 and to ensure that OFW projects adhere to environmental safeguards, marine spatial planning, and biodiversity protection standards. DENR also provides the technical basis for marine zoning and ecological sensitivity mapping, ensuring that OFW infrastructure is compatible with fisheries, marine habitats, and protected areas.
- **Department of Labor and Employment (DOLE):** DOLE plays a central role in skills development, workforce transition, and employment protection within the OFW value chain. In collaboration with TESDA, it can facilitate training programmes for welders, offshore technicians, engineers, and maintenance specialists aligned with the Green Jobs Act (RA 10771) and the Philippine Skills Framework for Energy Sector. DOLE's engagement ensures that OFW development generates decent work opportunities, supports local employment, and adheres to fair labor standards.
- **Department of Trade and Industry (DTI):** DTI is instrumental in promoting local manufacturing, industry participation, and supply chain development for OFW components such as blades, foundations, vessels, and cables. Through the Board of Investments (BOI), DTI can include OFW in the Investment Priority Plan (IPP), providing fiscal incentives to attract private sector investments and strengthen the domestic renewable energy manufacturing base.

- **Department of Economy, Planning, and Development:** DEPDev ensures that OFW development is strategically aligned with the Philippine Development Plan (PDP 2023–2028), particularly in achieving inclusive growth, regional industrialisation, and sustainable infrastructure development. DEPDev's oversight supports the mainstreaming of OFW benefits such as job creation, local industry stimulation, and social development into broader national economic strategies and investment programming.
- **Department of the Interior and Local Government (DILG):** DILG plays a bridging role between national policy and local government implementation. It supports LGUs in integrating OFW projects into their Comprehensive Land Use Plans (CLUPs), Comprehensive Development Plans (CDPs), and Local Climate Change Action Plans (LCCAPs). Through DILG's capacity-building initiatives, LGUs can better manage local benefit-sharing programmes, ensure community participation, and coordinate with OFW developers on social investment priorities.
- **National Commission on Indigenous Peoples (NCIP):** For OFW projects that intersect with ancestral domains or Indigenous Cultural Communities (ICCs/IPs), NCIP ensures compliance with the Indigenous Peoples' Rights Act (RA 8371). This includes the conduct of Free, Prior, and Informed Consent (FPIC) processes and guaranteeing equitable access of IP communities to project benefits and compensation measures.
- **Bureau of Fisheries and Aquatic Resources (BFAR):** BFAR plays a key role in ensuring that offshore wind development is aligned with fisheries sustainability and coastal livelihoods by providing fisheries data, impact inputs, and livelihood safeguards, and by supporting inter-agency coordination to manage marine-use conflicts and promote equitable benefits for fishing communities.

These agencies must work in a coordinated manner to harmonise policy instruments, community benefit frameworks, capacity-building programmes, and economic participation mechanisms. A recommended approach is the creation of an Inter-Agency Committee on Offshore Wind Development (IAC-OFW) led by DOE and co-chaired by DEPDev to oversee socio-economic and environmental integration, streamline permitting, and monitor compliance with benefit-sharing and workforce development commitments.

Local Planning Instruments and Integration

At the local government level, various statutory planning instruments provide formal entry points for integrating OFW-related socio-economic benefits into local development strategies. These plans guide the spatial, social, and economic dimensions of OFW development within coastal municipalities and provinces:

- **Comprehensive Land Use Plans (CLUPs):** CLUPs define the spatial framework for land and marine area utilisation. LGUs can designate coastal and offshore zones suitable for OFW development, ensuring compatibility with fisheries, navigation, and conservation zones. Integration of OFW zones in CLUPs supports long-term marine spatial planning and prevents land-sea use conflicts.
- **Comprehensive Development Plans (CDPs):** CDPs translate spatial and sectoral strategies into specific programmes, projects, and activities. They can identify community infrastructure and development projects such as livelihood hubs, training centers, and port improvements—funded through OFW-generated revenues, benefit-sharing mechanisms, or corporate social responsibility (CSR) programmes.
- **Coastal Resource Management Plans (CRMPs):** CRMPs serve as the operational tool for sustainable use and protection of coastal and marine resources. Integrating OFW within CRMPs allows co-management of marine areas between developers, LGUs, and fisherfolk organisations, ensuring that OFW activities coexist harmoniously with fishing and aquaculture livelihoods.
- **Local Climate Change Action Plans (LCCAPs):** LCCAPs provide the strategic framework for climate adaptation and mitigation at the local level. OFW investments can be aligned with these plans to support climate resilience initiatives, such as coastal protection, mangrove restoration, and RE-based community electrification.

When properly aligned, these local instruments ensure that socio-economic benefits from OFW development are localised, inclusive, and sustainable. LGUs thus become key partners in implementing benefit-sharing mechanisms, managing community funds, and monitoring socio-economic outcomes.

Policy Gaps and Integration Opportunities

The Philippine policy landscape provides a preliminary foundation for OFW development and has made significant progress in preparation for the impending offshore wind rollout. Going forward, the study has identified the following gaps and relevant integration opportunities.

1. **Institutional Coordination:** Multiple agencies share mandates relevant to OFW. Establishing clearer coordination mechanisms and a single-window approach could streamline permitting and ensure consistent implementation of policies.
2. **Local Government Capacity:** OFW projects require technical, financial, and institutional capabilities that many LGUs have not yet had reason to develop. Capacity-building support will be important.

3. **Workforce Transition and Skills Programmes:** The OFW industry requires specialised skills in marine engineering, offshore logistics, and safety. Developing structured training programmes will help prepare Filipino workers for these opportunities.

4. **Monitoring and Evaluation:** A standardised national system for tracking socio-economic benefits, community development funds, and local employment outcomes would strengthen accountability and learning.

These challenges highlight the value of a comprehensive national framework on OFW socio-economic benefits, supported by localised implementation mechanisms and strengthened institutional coordination across sectors.

Recommendations and Policy Directions

Regarding the context of the Philippines' policy and regulatory environment, to maximise the socio-economic benefits and ensure equitable outcomes from OFW development, the following strategic actions are recommended for benefit-sharing design consideration, while the detailed recommendations for mechanisms are discussed in Chapter 5.

1. **Develop a National Offshore Wind Benefit-Sharing Framework:** Modeled after ER 1-94, this framework should define the types, allocation mechanisms, and utilisation of financial benefits from OFW projects—covering community electrification, livelihood programmes, education, and climate adaptation funds for host LGUs.

2. **Institutionalise a Social Development and Local Employment Plan (SDLEP):** Require OFW developers to prepare SDLEPs in coordination with DOLE and DTI, detailing workforce requirements, local hiring targets, skills training, and social investment commitments.

3. **Integrate OFW into Local Development Planning:** Update **CLUPs, CDPs, and LCCAPs** to reflect OFW zones, port infrastructure, and community benefit programmes. This integration ensures that OFW becomes part of long-term local economic and resilience planning.

4. **Develop a National OFW Workforce and Supply Chain Roadmap:** Under DOE, DOLE, and DTI leadership, this roadmap should identify labor demand, training programmes, and industry linkages needed to build a competitive Philippine OFW industry and local supply chain.

5. **Establish a Multi-Agency Coordination Mechanism:** Create a National Offshore Wind Inter-Agency Committee led by DOE and DEPDev to coordinate OFW planning, permitting, environmental management, and socio-economic benefit delivery. This will ensure consistency across national and local levels.

6. **Strengthen Local Government Capacities:** Provide technical assistance and institutional strengthening for LGUs to effectively participate in OFW planning, manage benefit-sharing funds, and monitor socio-economic outcomes.

7. **Develop a Monitoring and Evaluation (M&E) Framework:** Formulate national M&E indicators for socio-economic performance of OFW projects, including employment generation, income distribution, gender participation, and community investment impacts.

Evaluation of Benefit-Sharing Practices and Local Job Access

Evaluation of the existing benefit sharing practices in the Philippines

There is no one-size-fits-all approach to benefit sharing that can be applied across all project development in different locations. However, regarding the purpose of benefit sharing, good benefit-sharing mechanism and tools should include some fundamental principles or objectives. The Climate Action Network Europe recommends 3 "Cs" – **Communication, Context,** and **Competence.** Besides, the World Bank highlights seven lessons to design benefit sharing: (1) commitment from the top, (2) early planning, (3) mission orientation, (4) inclusive redistribution, (5) transparency and accountability, (6) robust monitoring and reporting, and (7) partnerships are key to success. The Clean Energy Council proposes the following principles: (1) Appropriate, (2) Flexible, (3) Transparent, (4) Integrated, (5) Mutually beneficial, and (6) Strategic. The core principles and factors for benefit-sharing are similar, and this study uses the high-level principle to discuss the potential socio-economic benefits of offshore wind development in the Philippines.

Local context and engagement are fundamental to the success of benefit sharing, while governance and strategy are the hidden factors that ensure the delivery of benefits. Capacity building, on the other hand, is the facilitator for sustainable development. To evaluate the benefit sharing in San Miguel Bay and the Guimaras Strait and recommend potential policies to facilitate the relevant development, this study focuses on the key principles in Table 3.1. Together, these principles establish a more comprehensive and well-organised benefit-sharing mechanism for the local community.

Table 3.1

Benefit-sharing key principles

Principles	Content
Context-Specific Design	Tailor benefit-sharing mechanisms to the local socio-economic, cultural, and environmental context: • Identifying who is affected and who should benefit (e.g., host communities, indigenous groups, fishing communities, industries) • Recognising opportunities and challenges to determine the nature of benefits (e.g., mitigation vs. opportunity creation) • Aligning local context with strategy for the development of benefit sharing
Early and Inclusive Engagement	Engage communities before project planning begins and maintain dialogue throughout: • Use community liaison officers or local advisory groups /representatives • Ensure transparency and shared decision-making in benefit design • Identify the vulnerable groups and their needs before planning

Table 3.1 continued

Benefit-sharing key principles

Principles	Content
Legal and Governance Clarity	Ensure benefit-sharing mechanisms and tools are: • Legally enforceable, with clear dispute resolution and accountability clauses in the recognised policy and regulation • Supported by high-level commitment and structured under clear and transparent governance frameworks • Monitored and evaluated regularly to track delivery and impact
Capacity building	Realisation of benefit sharing relies on the stakeholders having the relevant knowledge and experience to plan and execute the mechanisms and tools • Ensure the authorities and stakeholders understand the governance mechanism and conditions • Cultivate relevant knowledge for practical cases or learning sessions • Identify the constraints and development needs to design and implement the training, skill cultivation, facility investment, etc.

The Philippines' existing benefit sharing for ocean and coastal development

As discussed in the policy and regulatory analysis, there are some mechanisms for benefit sharing in existing policies on renewable energy and coastal development. The top-down regulations of DOE cooperate with other competent authorities to facilitate project development, economic growth, and energy system enhancement, which realises the main economic benefit at the national level. The benefit sharing at local level relies on statutory revenue sharing for host Local Government Units (LGUs) and corporate social responsibility (CSR) initiatives.

1. National Level

Under the Electric Power Industry Reform Act (EPIRA) and its implementing rules (Amended ER 1-94 Programme), power companies are required to allocate funds for local communities hosting the project. The calculation formula for allocating the fund is complex and generally translates to an equivalent of 0.03 PHP/kWh of electricity sales to the host Local Government Units (LGUs). Additionally, energy projects are often required to remit a percentage (e.g., 1% of gross income) to be divided between the national and local governments. This fund is meant for the development of electrification, health, and livelihood programmes, and the detailed policy and implementation depend on the requirements for different LGUs.

For industrial development, there is no clear mandatory local content requirement (LCR) and procurement from the Filipino supply chain for offshore wind development. Regarding the Philippines' industry status, it is not feasible to have extensive local content requirements in the short term. However, some industries, such as steel and O&M services, are likely to develop relevant capabilities and participate in offshore wind development to capture additional local economic benefits.

Regarding environmental and social perspectives, the public scoping part of the Environmental Impact Assessment (EIA) procedure in the Philippines is implemented. Stakeholders can communicate their concerns and comments on project development planning, which can help formulate mitigation plans and risk management strategies for the project. As offshore wind development requires substantial capital from international financing sources, it is expected that an Environmental and Social Impact Assessment (ESIA) in accordance with international standards, such as the IFC Performance Standards (PSs), will be adopted, although this is not a regulatory requirement. This is expected to further drive top-down benefit-sharing at the regional and local levels. The IFC PSs cover risk management, labor and working conditions, resources and pollution, community, land acquisition, biodiversity, Indigenous peoples, and cultural heritage, providing a comprehensive framework to improve the implementation of impact mitigation, compensation, and benefit sharing.

There are requirements embedded in the DENR's permitting process and those of related authorities. The permit and socio-economic content are shown in Table 3.2.

Table 3.2

Regulatory Social and Environmental Requirements

Permit and consent	Purpose and requirement	Socio-economic Contribution
Environmental Compliance Certificate (ECC)	Issued by the DENR-EMB after a successful Environmental Impact Assessment (EIA).	Requires the assessment and mitigation of socio-economic impacts (e.g., impact on fishing grounds, tourism, and local livelihoods). The developer must commit to specific mitigation measures, such as compensation or alternative income opportunities for affected coastal communities and fishers.
Stakeholders Engagement Plan	A required component of the ECC submission, as per DENR Administrative Order (DAO) 2024-02 for OFW projects.	Defines activities for consultation with local communities and relevant government agencies throughout the project's lifecycle to ensure transparency and address concerns.
Free, Prior, and Informed Consent (FPIC)	Mandated by the National Commission on Indigenous Peoples (NCIP) for projects affecting ancestral domains or waters.	Ensures that Indigenous Peoples are consulted and agree to the project, often resulting in benefit-sharing agreements and provisions to respect their cultural practices and traditions.

2. Regional and Local Level

In line with central government policies and regulations, LGUs are the primary authorities for establishing detailed requirements for socio-economic benefit sharing in project development. The awarded OFW projects are still under development so the actual allocation and remittance of the mandated community funds have not yet begun. However, developers have publicly affirmed that the projects are designed to create economic value and lasting benefits for local communities, citing their commitment to the mandated financial contributions and to funding community-centered initiatives (e.g., job creation, livelihood support) in addition to the legal requirements.

LGUs and local stakeholders, including barangay officials, affected households, fisherfolk groups, and civil society organisations (CSOs) of host communities and affected municipalities, have participated in the mandatory Public Scoping Activities as part of the Environmental Impact Assessment (EIA) process. The engagement can serve as the basis for establishing a future local benefit fund or other supporting initiatives. These public hearings are crucial for the LGUs to identify and articulate the specific issues and concerns of the local community, such as impacts on fishing grounds, coastal resources, and local livelihoods. The projects' Environmental Compliance Certificate (ECC) and the developers' plans for mitigating social impacts can include socio-economic benefit sharing.

Overall, the LGUs are focused on coordination and planning to prepare for development and investment, actively participating in the processes that will define the projects' impact mitigation and secure the legally entitled revenue-sharing that will eventually form the community fund. LGUs are in the "facilitator" role to ensure that developers and stakeholders can achieve meaningful agreements to enlarge the impact of benefit sharing. Early engagements on environmental and social issues have been initiated; however, a specific plan and policy for offshore wind development in the study areas are not yet in place.

3. Coastal Management

Community-Based Coastal Resource Management (CBCRM) is a long-standing conservation and fishery resource management strategy in the Philippines. CBCRM was the dominant approach in the Philippines for managing coastal resources, particularly fisheries, and its experience highlights critical social and governance issues directly applicable to new ocean uses such as offshore wind. Through this approach, coastal communities are given the opportunity and responsibility to manage, protect, and rehabilitate their local coastal and marine resources, empowering them to derive their livelihoods and benefits from development. The CBCRM primarily generated non-monetary benefits, focusing on natural resource sustainability to generate indirect financial output.

A study from the late 1990s shows the benefits of coastal fishery resource management in the Philippines through CBCRM. Two well-recognised project areas are Lingayen Gulf (Bolinao and Anda, Pangasinan), and Visayas (Apo Island, Negros Oriental). Lingayen Gulf projects include destructive fishing, the conversion of mangroves to fishponds, and the unchecked proliferation of fish pens. Visayas is well-recognised for the successful ecological and economic benefits from Marine Protected Areas (MPAs) under community supervision. Some key factors collectively form the mechanisms for the CBCRM, as shown in Table 3.3.

Table 3.3

Philippine CBCRM key mechanisms and elements

Mechanism / Element	Socio-economic Benefit	Content
Community Empowerment	Social capacity building	Communities are organised into People's Organisations (POs) and participate in the management process. This leads to increased local leadership and autonomy, fostering a strong sense of responsibility and solidarity.
Marine Protected Areas (MPAs)	Environmental stewardship and increased fish catch	A core strategy is the establishment of "no-take" zones as MPAs where fishing is prohibited. Over time, the abundance, species richness, and size of fish increased both inside the reserve and in adjacent fishing grounds. This "spillover" directly led to enhanced fisheries yield for the local fishers.
Alternative Livelihoods	Diverse income and job types	Some projects introduced and supported sustainable livelihood activities that were linked to conservation, e.g., seaweed farming, handicrafts, and ecotourism.
Ecotourism Development	New income sources	In successful cases, e.g., Apo Island, Olango, the conservation status led to the rise of ecotourism. Revenues generated from tourism services created incentives for sustainable resource management.
Institutionalisation	Governance improvement	The process often involves securing local ordinances and establishing Fisheries and Aquatic Resources Management Councils (FARMCs), which provide a formal, legal basis for communities to co-manage relevant topics with the local government.

Although there have been successful cases of coastal management through CBCRM in the Philippines, this approach may need to be adjusted to address the evolving needs of offshore wind development and the latest socio-economic context.

CBCRM did not receive clear outcomes in every case and location. The local context, engagement approach, and project design lead to different outcomes. For example, insufficient local capability and education levels are among the barriers to effective management, whereas funding sources and development design are critical factors in facilitating operations. One of major challenges in CBCRM was ensuring that benefits actually reached the poorest and most marginalised and do not end up in the hands of those who are not meant to receive them. By contrast, the successful cases demonstrated strong local empowerment among communities and fishers. The bottom-up approach to defining the "host" and "affected" communities is crucial for establishing meaningful dialogues to co-design and build trust in the benefit-sharing and resource management mechanisms.

The existing Fisheries Co-use Compensation Agreements range from one-off cash payments to negotiated periodic compensation, spatial restrictions, and exchange of gear or alternative livelihoods. However, stakeholders revealed frustration with unclear valuation methods, delayed payments, and a lack of independent review and evaluation.

In essence, the CBCRM experience provides a blueprint for managing the social dimension of ocean development. It teaches that without granting the local community a sense of ownership and control over the process and ensuring the equitable distribution of clear, tangible, and relevant benefits, no large-scale development in the Philippine coastal zone can truly be sustainable.

Consideration for the Philippines' offshore wind development benefit sharing

Given that the offshore wind industry is in its early stages in the Philippines, there will be different considerations for the design and implementation of socio-economic benefit sharing. It is crucial to consider the main development barriers and identify potential solutions that can bring mutual benefits for the project and local development. Regarding the regulatory and market status of the Philippines, the World Bank report discusses key issues. The World Bank and the Philippine government pay significant attention to job creation effects, which are linked to local content and supply chain development. Offshore wind development is expected to bring new opportunities for industries and businesses, thereby improving energy security and enhancing the country's low-carbon energy supply. Job creation and LCRs are likely to facilitate training and skill development, leading to inclusive opportunities and alternative livelihoods for local communities. Those expectations should be carefully articulated in the design of the development policy and the benefit-sharing mechanism.

As discussed and presented in Chapter 1, Chapter 3, and Table 1.2, different perspectives and categories of benefit sharing should be considered to identify and analyse the key approaches to ensure that the practical and meaningful benefits can be realised by the developers and the stakeholders. Figure 3.1 presents the different offshore wind development topics in the Philippines context across the main benefit-sharing perspectives. Each key topic is relevant to multiple benefit-sharing perspectives and connections, demonstrating the potential to bring multiple benefits and solutions that enhance the positive impacts of offshore wind development in the Philippines.

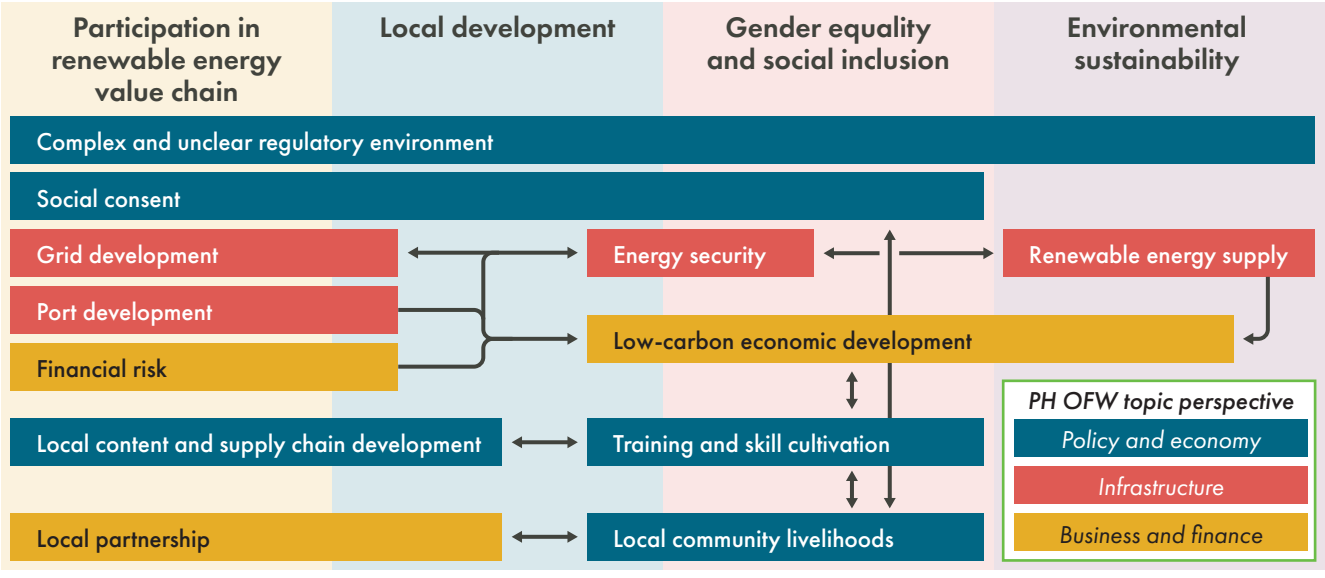


Figure 5

Benefit sharing and the Philippines' offshore wind topics

Aligning policies and regulations across agencies will help clarify benefit-sharing mechanisms for project development. Our stakeholder engagement revealed four governance themes that must be considered for OFW benefit sharing design (see Appendix C - Summary of Key Stakeholder Engagement Interviews):

1. **Governance concentration:** Most funds and CSR programmes for existing benefit sharing are controlled by developer/contractor interests with limited, token community representation. This reduces trust and perceived legitimacy. The regulation, guidelines and governance (monitoring and evaluation) may help to improve governance practices. From national to local governments, different layers of governance and policy setting can improve the quality of benefit sharing.

2. **Opaque funding rules:** The situation of unclear eligibility, selection criteria, and absence of publicly available disbursement reports, etc., leads to mistrusted outcomes, and the mechanism may lose support or attention for proper implementation.

3. **Participation gaps:** Community consultations are often ex-post (after project design) or perfunctory. The impacted groups, such as fisherfolk representatives, women's groups, and youth organisations, reported limited meaningful engagement. Benefits should avoid being clustered around barangay centers or households with existing ties to developers. Also, vulnerable groups should be actively encouraged to engage and improve the lack of documentation, timing conflicts, or exclusionary recruitment processes. To improve the inclusiveness of benefit-sharing mechanisms, there are some recommendations from the stakeholders:

    1. Clear and public commitments
    2. Transparent community funds with multi-stakeholder/representative oversight
    3. Timely and fair compensation for affected stakeholders, e.g., fisheries
    4. Investments in local capacity building for OFW development and engagement
    5. Guaranteed interview opportunities.
    6. Grievance mechanisms with third-party review/oversight

4. **Effectiveness tied to enforceability:** Where benefit-sharing arrangements are contractually linked to project milestones (e.g., local hire % tied to payment releases). The performance review, incorporating a key performance indicator (KPI), can be adopted and linked to the conditions for the permit and consent process, as well as FiT payment, thereby demonstrating a clear mandate to ensure the quality of benefit-sharing. It is vital to continuously monitor and review the implementation and impacts of project development and benefit sharing to ensure the alignment and effectiveness of the mechanisms.

In addition, the benefit-sharing aims for inclusive and positive socio-economic impacts for the affected stakeholders. The existing cases of benefit sharing in the Philippines have the following issues that result in barriers to local access to the benefits:

1. **Optimised governance:** As discussed above, several governance elements warrant attention to establish trusted and functional benefit-sharing mechanisms.
2. **Comprehensive planning and roadmap:** Cross-government agencies and long-term planning are critical to support the OFW development and give the developers and stakeholders a better understanding of the development timeline and expected outcomes. Aligning policies and mechanisms across agencies will support smoother OFW development and the generation of social benefits.
3. **Local capacity and educational background:** The coastal areas in the Philippines are the least developed and mainly composed of agricultural and fishery populations, with a knowledge gap for policy and regulation, project development, engineering, finance, etc., resulting in challenges to have effective engagement for decision-making. Early-stage engagement is recommended to build trust and provide training and capacity building in relevant knowledge for long-term cooperation.
4. **Standardised criteria and requirements:** Standardising impact assessment and data collection methodologies would help ensure consistent implementation and management, and developers and LGUs may not have compliance pressure to have qualitative benefit sharing.

Stakeholders' consideration for benefit-sharing

According to the stakeholder engagement of this study, the main expectations and considerations for OFW development benefit sharing are shown Table 3.5.

Table 3.4

Categorisation and identification of benefit sharing from literature review

Stakeholder	Expectation for "socio-economic benefits"	Concrete examples /priority items (expectation)	Focus /Concerns
Local Government Unit (LGU)	Aligning with the definition of this report, LGUs consistently framed benefits in pragmatic, local development terms: jobs, infrastructure, local revenues, and improved services.	• Jobs (construction, O&M) • Local revenue /investment inflows • Electrification /infrastructure (ports, roads) • Lower electricity costs • Better municipal services • Ordinances /local energy codes	Focus on how benefits support municipal development goals (CLUPs, ordinances) and on enforceable, transparent benefit mechanisms (MOA/ordinance). LGUs expect benefits to be demonstrably local and tied to permit/contract conditions.
Business Groups	Aligning with the definition of this report but emphasising business and market effects: including business opportunities, supply chain growth, tourism potential, and upskilling of local labor to meet project standards.	• New markets/supply contracts (shipyards, transport, catering, accommodation) • Ecozone development • Small and Medium Enterprise (SME) readiness (access to credit, certification) • Job creation that stimulates economic activity	Business stakeholders emphasised the need for detailed project information, capacity building for SMEs, and environmental protection as prerequisites for sustained economic benefits.

Table 3.4 continued

Categorisation and Identification of benefit sharing from literature review

Stakeholder	Expectation for "socio-economic benefits"	Concrete examples /priority items (expectation)	Focus /Concerns
Fisherfolk associations / community fishers	Define socio-economic benefits primarily in livelihood and household security terms: continued fishing access or fair compensation, durable alternative livelihoods, and community support services that sustain families. They accept infrastructure and jobs as secondary benefits but prioritise livelihood protection and long-term, revolving support.	• Compensation for lost fishing access • Fuel subsidies • Gear replacement • Alternative livelihood programmes (seaweed, processing, post-harvest facilities). • Long-term income-generating support rather than one-off cash • Training with guaranteed placement • Community-level disbursement by household/association.	Strong emphasis on protecting fishing rights, and clear preference for community-level / household distribution rules, and on consultation modalities They expect sustainable, revolving benefits (not one-time) and transparent grievance channels.
Civil Society Organisations (CSOs)	Aligning with the definition of this report, but expanding it to include social safeguards, inclusive participation, capacity building, and environmental stewardship as integral to socio-economic benefit. They frame benefits as both material (livelihoods, infrastructure) and institutional (voice, governance, social services).	• Strengthened social enterprises • Food security programmes, capacity building, and training (leadership, livelihoods) • Health/education support • Community governance mechanisms (multi-stakeholder boards, MOAs), • Environmental protection measures.	CSOs stress equitable distribution (women, youth, marginalised groups), just transition principles, and combining short-term assistance with long-term institutional support (e.g., scholarship, coastal protection). They favor participatory co-design of benefits.
OFW Developers	Aligning with the definition of this report, further defines benefits as job creation, local manpower use, port development, supplier engagement, and training partnerships that support project viability and local economic participation. Benefits framed around realistic local content and bankability constraints.	• Construction jobs • O&M jobs; use of local ports • Training with TESDA/SUCs • Internships/apprenticeships; selective local procurement (subject to quality/vetting).	Developers emphasises realistic limits (major components and specialist installation are internationally sourced), need for third-party vendor vetting (bankability), and staged capacity building. Developers signal willingness to partner on training and local use of ports but notes some benefits are conditional on commercial/technical constraints.

Mechanism and approaches for renewable energy development benefit sharing

There are various types and approaches to benefit sharing in renewable project development (see Tables 1.1 and 1.2 in Chapter 1), which can be tailored to local policies, market conditions, and social contexts. Different models rely on other inputs and regulatory and market environments. Benefit-sharing can be either quantitative or qualitative, aiming to capture different perspectives on impacts. It requires a different mechanism and target-setting to achieve the expected benefits.

The inputs from renewable projects include capital payout, equity and ownership sharing, asset or facility rent or share, service provision, knowledge sharing, and business opportunity, etc. The general outputs include monetary income, job opportunities, in-kind benefits, technology development, infrastructure development, services, business development, education, and social relationships. The developers, authorities, and local communities can establish the strategy and target for benefit sharing and develop the design and plans for the mechanisms. Some of the standard benefit-sharing mechanisms from international case studies and literature review are collected below.

Table 3.5

Benefit mechanisms basis

Mechanism	Description	Input/efforts	Output/benefits
Community Benefit Agreements (CBAs)	Legally binding agreements outlining benefits, including various outputs per agreement	• Capital • Engagement • Investment per agreement	• Pay out • Empowerment • Benefits per agreement
Community Development Funds (CDF)	Annual contributions to local development	• Capital • Management	• Long-term fund for development • Per fund uses
Local Employment & Training	Including job quotas/ priority, apprenticeships, and scholarships	• Job opportunity • Training resources	• Training and skills • Job and income
Supply Chain Localisation	Prioritise local suppliers and contractors and support the development of the local supply chain	• Supply chain engagement • Strategy planning • R&D (supplier) • Procurement	• Business opportunities • Industry development • Job and income
Shared Ownership Models	Community investment in project equity	• Equity shares • Engagement and management	• Project income • Empowerment • Capacity building
Infrastructure Co-Investment	Invest in roads, grids, ports, schools, hospitals, etc.	• Capital • Investment plan • Engagement and management	• Infrastructure • Project development basis • Livelihood improvement

The mechanisms are described as follows:

1. **Community Benefit Agreements (CBAs)**

   A Community Benefit Agreement (CBA) is a legally binding contract between a community coalition and a developer. It ensures that a development project provides specific benefits to the local community, mitigating potential challenges. It is a common approach for a project to obtain a social license to operate (SLTO) through an agreement, which may cover various topics and include direct or indirect benefit sharing resulting from the project's development. Additionally, the CBA can serve as the basis for multiple subsequent benefit sharing arrangements in practice, such as the establishment of funds, job opportunities, procurement, and investment.

   CBAs must align with the local legal system and be subject to public accountability. It is the result of engagement between the developer and specific stakeholders, especially affected or vulnerable groups, through collective negotiations by most members or their representatives. To achieve a CBA, stakeholder engagement is necessary to identify issues and needs, followed by an accountable negotiation process to develop the executive plan and allocate resources before the agreement is confirmed.

   CBAs often address a range of issues tailored to the community's needs, but specific interests or benefits will be identified and consolidated into the agreement, which may include:

   - Job creation and local hiring: Commitments for a percentage of construction and permanent jobs to go to local residents.
   - Wages and fees: Requiring the payment of living wages or prevailing wages for project jobs, compensation, or supporting programmes.
   - Infrastructure, amenities, or services: Funding for new or improved roads, grids, ports, stations, parks, schools, libraries, public transportation, or childcare and nursery facilities. The service may include healthcare, training, food supplies, energy supplies, and other essential services.
   - Affordable Housing: Dedicating a certain number of units in the development or contributing to a local housing trust fund.
   - Environmental Commitments: Sustainable building practices, pollution mitigation, and green space preservation.

2. **Community Development Fund**

   A Community Development Fund (CDF) is a formal, dedicated mechanism designed to ensure a portion of the revenue, profit, or value generated by a project is channeled directly and sustainably back into the local community for self-determined development. The CDF is commonly established under an agreement between the developer and local beneficiaries, or the local government can serve as the mediator for its establishment and governance.

A CDF is a dedicated financial pool that is capitalised through a reliable source(s). The key feature of a successful CDF is that its management and decision-makers are primarily vested in a board or committee composed of local community members or stakeholders with a direct interest in the topic. The funds are typically invested in long-term, public-benefit projects that address local needs, such as education, healthcare, infrastructure, or local economic development. The fund's operations must be transparent, with clear reporting on revenues, expenditures, and project outcomes to build and maintain trust.

There are some common sources for the community development fund, including:

- **Project-Based Contribution:** A fixed percentage of a project's annual income or net profits to have sustained finance connected with project performance.
- **Fixed Annual Fee:** A set monetary amount paid annually by the project proponent.
- **Community Social Responsibility (CSR) Budget:** A structured allocation from the company's CSR budget, which may not have a stable contribution for the long term.
- **Government Mandates/Taxes:** Revenue from special taxes or royalties paid to the government that are earmarked for the local community.
- **Community Investment/Equity:** Revenue derived from the community holding a direct equity stake in the project and can share the project revenue in accordance with the share or sell the equity for direct cash flow.

In the Philippines, CBA and CDF established by developers or companies are typically governed by a board that often includes company representatives and one or two community or LGU members. While there are cases where small-scale community investments like livelihood grants and infrastructure have seen success, stakeholders have identified opportunities to strengthen these mechanisms through increased transparency in fund allocation, expanded multi-stakeholder governance, and closer alignment with local priorities.

3. Local Employment and Training

Job creation is the most mentioned socio-economic benefit for offshore wind development. However, it is crucial to analyse local employment opportunities rather than overseas ones, as these may not benefit the local community. The benefit from job creation is related to the local content requirement, which expands opportunities in the local supply chain. Employment can have a spillover effect, which can be estimated through direct, indirect, and induced job opportunities. Local employment can further cultivate technology and skill development. The training programmes will be vital to encourage more people to join the offshore wind industry and promote the expected growth.

Local employment can be promoted through job quotas, apprenticeships, and scholarships to support education and skill development. The developers can identify local employment needs and collaborate with communities to establish hiring and training programmes tailored to the project development timeline and professional needs at each stage.

In addition, developers and the government can invest in offshore wind training centers, creating mutual benefits by securing qualified workers and generating local employment. Partnering with vocational schools and regional universities also enhances the local capacity to seize job and training opportunities.

Formal local hiring clauses are not yet standard practice in the Philippines. Stakeholders noted that commitments are often informal, presenting an opportunity to develop clearer frameworks linking commitments to recruitment outcomes. Some of the barriers are identified:

a. **Skills & certification gaps:** Technical jobs require formal certifications (e.g., STCW, GWO for maritime) and specialised training is seldom available locally.

b. **Informal sector status of fisherfolk:** Lack of formal employment history or certifications reduces competitiveness for hiring systems that look for documented experience.

c. **Mobility & logistics:** Commuting constraints, lack of transport/ affordable lodging near worksites.

d. **Gender norms & care responsibilities:** Women cited childcare and social norms as constraints to participating in shift work or long-hours roles.

e. **Information asymmetry:** Communities often learn about jobs too late or through informal networks that exclude marginalised groups.

f. **Contracting thresholds:** Local micro/small suppliers cannot meet insurance, bonding, or technical standards required by large developers.

g. **Insufficient soft skills and job placement support:** Employer expectations for workplace discipline, English language, and digital literacy are often unmet.

h. **Limited women-focused technical training:** Few programmes adapt schedules or content to encourage women's participation (e.g., flexible hours, childcare support).

4. **Supply Chain Localisation**

Following local employment, supply chain localisation by local content requirement (LCR) is adopted in some markets (e.g., UK and Taiwan). However, this approach requires careful design and management to avoid affecting project development itself due to high costs and an unqualified local supply chain. A flexible LCR approach is usually welcome, allowing localisation items and timelines to be adjusted to establish a local supply chain within a feasible, cost-effective roadmap. The developer can have its own strategy and plan for co-investment and cooperation to implement the local supply chain.

For supply chain localisation, some key factors will lead to various outcomes:

- Governance of LCR: requirements or incentives
- Certification programme and related training for the local supply chain
- Sufficient development size to create economies of scale
- Early planning and mapping of the localisation timeline
- Establish technical cooperation, transfer, or joint investment
- Other government support and funding

5. **Shared Ownership**

This model of benefit sharing goes beyond passive benefit, such as a community fund, granting the community or related stakeholders co-ownership of the project, aligning their financial interests with the project's long-term development. Through the ownership of the project, the beneficiary enjoys three kinds of benefits:

1. **Financial benefit:** the beneficiary receives the income through dividends based on the project's profitability and capital gains.
2. **Empowerment and control:** the ownership comes with a certain level of rights and representation in the project team, which leads to the decision-making opportunity regarding the scope and the ownership agreement.
3. **Capacity building:** the beneficiary can have the opportunity to engage in the internal discussion for the project development, which brings the learning opportunity for the local knowledge and experience for other development.

Shared ownership is typically intended to secure the social license to operate (SLTO) for development areas. Through ownership, the stakeholder becomes a shareholder, participating in the project's success. However, implementing a community shared ownership programme requires careful planning, legal structuring, and sustained commitment to transparency and capacity building. It is also vital to have a clear definition of rights and responsibilities in the agreement, including a clause on the beneficiary's benefit flow and the scope of work, to ensure efficient project development and benefit generation. The models of shared ownership are shown in Table 3.6.

Table 3.6

Community shared ownership models

Model	Description	Benefit Flow
Direct Community Trust (or Cooperative)	A legally established non-profit entity (Trust or Co-op) holds the shares on behalf of all eligible community members.	Dividends flow to the Trust, which then funds community development projects or provides targeted benefits.
Individual Share Ownership	Project shares are purchased or allocated directly to eligible local residents (often at a discounted rate or subsidised).	Dividends and capital gains flow directly to individual households, building personal wealth.
"Hybrid" Model (Community Equity Fund)	A fund invests in a portfolio of local projects, offering shares to residents as passive investors, allowing them to profit from local development.	Financial return (dividends/interest) is paid to local shareholders.

6. Infrastructure Co-investment

In cases of insufficient infrastructure for wind farm development, co-investment or indirect investment can create mutual benefits for the project developer and local communities, who benefit from infrastructure installation or improvement. Especially in underdeveloped places, local governments may not have an adequate budget to improve the infrastructure, and the local communities have less access to modern infrastructure, the investment from the project can bring significant livelihood improvement.

The investment options are generally relevant to the development of grid, port, road, and energy system facilities, which are crucial for the construction and O&M of offshore wind farms. Sometimes, it can invest in livelihood-related projects, such as hospital, school, and libraries, which can improve the living standards of the local community. To implement the infrastructure investment, the developer can opt for a one-off investment or a long-term payment based on project income. Also, the investment and installation have to follow the authorities' plan and regulations.

In the Philippines, existing projects commonly invest in local electrification, schools, or roads as part of offsets or community benefit packages. While communities value these investments, stakeholders suggested that clearer geographic targeting criteria and maintenance planning would strengthen these programmes.

It would be beneficial to align with national development goals and strategy, as well as with climate resilience and energy transition plans, as the infrastructure is expected to function for decades. Regarding the impact of climate change, infrastructure investment should prioritise resilience against risks and impacts across different climate scenarios.

Potential implementation for benefit-sharing strategies in the Philippines

Promoting socio-economic benefit sharing involves maximising local content, creating high-value jobs, and ensuring that affected communities receive direct benefits. Based on our analysis of benefit sharing (Section 3.1.1, 3.1.5, and 3.1.6), the Philippines' socio-economic context, and best practices, this study summarises key strategies for the Philippines government across the National government to LGUs to promote socio-economic benefit sharing in the San Miguel and Guimaras areas.

1. Policy and Regulatory Framework improvement

    - **Streamline permitting and regulatory processes:** Establish a clear, predictable, and single-window permitting system to reduce bureaucratic delays, which helps de-risk projects and makes the market more attractive for both local and foreign investors.
    - **Integrate socio-economic goals into planning:** Ensure Marine Spatial Planning (MSP) process not only considers environmental and technical factors but also deliberately incorporates socio-economic and community needs, including fishing areas and tourism.
    - **Provide investment incentives:** Offer tax breaks, grants, or other financial incentives for developers and suppliers who meet ambitious local content, job creation, and community investment targets.
    - By adopting these **multi-faceted strategies**, the Philippines can ensure that its vast offshore wind potential not only contributes to energy security and climate goals but also serves as a powerful engine for inclusive and sustained socio-economic development across the archipelago.

2. Policy and Regulatory Framework improvement

    - **Establish a clear Local Content roadmap:** Local content can contribute significant benefits sharing but it needs dedicated and careful policy planning to avoid counterproductive effects. The government should make a detailed assessment of the potential for using local goods, services, and labor across the project lifecycle, and establish a feasible roadmap for the local content ratio in OFW projects at different development stages. These can serve as references for the local supply chain, developers, and investors to support the development of local industries. These should be transparent and non-discriminatory to encourage foreign investment while developing local capacity.
    - **Identify and support local industries:** Conduct comprehensive studies to identify Filipino companies with transferable skills (e.g., steel manufacturing, shipbuilding, logistics, technical services) and provide targeted support (e.g., financing, technology transfer, certifications) to enable them to enter the OFW supply chain.
    - **Invest in port, grid, and infrastructure upgrades:** Develop key ports into specialised marshalling and manufacturing hubs to support the installation and O&M phases of OFW projects, attracting foreign direct investment for high-value manufacturing activities like foundation and tower component production. The grid infrastructure is a hidden barrier

for the realisation of the offshore wind benefits, and grid improvement is the key to ensuring a stable and reliable green energy supply for Philippine industries.

- **Promote a regional supply chain approach:** Given the scale and cost of OFW components, foster regional cooperation to position the Philippines as a key player in the Asia-Pacific OFW supply chain, focusing on its competitive advantages like its skilled maritime workforce.

3. Job Creation and Skills Development

   - **Implement targeted training and certification programmes:** Collaborate with educational institutions and international partners to establish specialised vocational and technical training programmes (TVETs) to develop a local workforce skilled in OFW-related roles (e.g., turbine technicians, welders, marine engineers, project managers).
   - **Leverage the Filipino maritime workforce:** Utilise the country's globally recognised pool of skilled seafarers for roles in marine construction, transportation, and operations & maintenance (O&M) of offshore assets.
   - **Prioritise local hiring:** Encourage or mandate developers to prioritise hiring qualified local residents from host communities for both the construction and long-term O&M phases of the project. A significant number of jobs, particularly in O&M, offer stable, high-wage employment for decades.

4. Direct Community Benefits and Social License to Operate (SLTO)

   - **Implement community benefit-sharing mechanisms:** Go beyond regulatory compliance (like Environmental Compliance Certificates) to establish proactive, voluntary initiatives that create tangible value for local communities. These can include:
     - ◊ **Shared ownership models:** Explore mechanisms for local communities or local government units to have a stake in the project revenue.
     - ◊ **Community Funds/Trusts:** Establish funds, financed by project revenue, to invest in local priorities like education, healthcare, infrastructure, and livelihood programmes.
   - **Address impacts on traditional livelihoods:** Since offshore wind development can affect fishing grounds, implement measures such as co-existence funding and compensation for fisheries: Work with local fishers to map important fishing grounds, adjust project layouts, provide fair compensation for lost access, and invest in modern fishing/aquaculture techniques as alternative livelihoods.
   - **Transparent stakeholder engagement:** Maintain open, continuous, and culturally appropriate dialogue with all affected stakeholders, especially Indigenous Peoples, local communities, and the fisheries sector, to secure and maintain a SLTO throughout the project lifecycle.
   - **Enhance local infrastructure and public services:** Invest in local roads, power grids, communication facilities, and disaster-resilience measures that benefit the wider community, going beyond just the immediate needs of the OFW project.

Job access in the Philippines

This section conducts a gap analysis of the Philippine industries and workforce in relation to offshore wind development needs. With a comprehensive understanding of the current status and gap analysis, the OFW employment opportunities can be further discussed. The detailed gap analysis for the job workforce and capability in the different phases of OFW development can be found in Appendix B.

Gap analysis approach and assumption

To understand the existing workforce gap in offshore wind development in the Philippines, this study took a top-down approach to assess the current industry landscape and identify potential gaps. The identified workforce needs are based on our understanding and experience of global offshore wind projects and have been adapted to the unique local characteristics of the Philippine market.

Categorisation of the current workforce status has been defined on a five-grade scale, from no capability to fully capable of delivering the needs for OFW development in Table 3.7. The gap or the amount of effort and investment necessary to meet the requirements of the offshore wind industry are then graded on a 3-point scale as identified in Table 3.8.

This study identifies the local workforce status and potential opportunities across categories, provides an overview of the main workforce gaps, and underscores the need for offshore wind farm development in the Philippines.

Table 3.7

Workforce status analysis grading explanation

Grade	Level	Definition and Explanation
1	**No capability**	The current market lacks a relevant workforce, and it is highly unlikely that local hiring can occur without proper training. Existing industries do not possess a workforce with similar skills or credentials relevant to this sector. At this level, there is a critical need for adequate training and investment in workforce development.
2	**Limited capability**	Currently, there is a limited pool of directly available workforce for the offshore wind industry. However, there is potential for transferable skills from other local industries, with proper training, to fill this gap. Despite this potential, it remains challenging for employers to recruit qualified individuals from the local workforce pool. Therefore, the prospect of successfully building up the local supply of skilled workers remains unlikely in the short term.
3	**Some capability**	In the short term, some individuals from the existing labor market or overseas Filipino workers may be able to support offshore wind development. However, it is unlikely that long-term needs can be fulfilled with current resources alone. Professional training will likely be necessary to bridge the gap between individuals from different fields, such as oil and gas, and support offshore wind development effectively. At this level, existing resources can only partially meet short-term needs, and the main workforce may need to rely on foreign professionals or imports.
4	**Adequate capability**	The workforce with the expected experience and qualifications does exist in the market. However, it may not be able to support large-scale projects or capacity development within a short timeframe. Qualified individuals are sufficient for pilot project development, and employers should not face significant difficulties in hiring the appropriate professionals and technicians with competitive offers. At this stage, the market needs to continue training individuals to ensure the long-term sustainability of offshore wind development.
5	**Fully capable**	The local workforce provides a robust, ample supply of labor to support the Philippines' offshore wind market for the targeted capacity. The required skills are widely available in the existing market, and the development of new offshore wind farms is unlikely to lead to significant resource scarcity. Employers should encounter minimal challenges in hiring preferred professionals and technicians for these projects.

Table 3.8

Gap explanation

Grade	Level	Explanation
1	**Severe**	A significant gap exists between the expected local workforce supply and the requirements for offshore wind development. Relying solely on local talent to meet project needs is highly improbable. Urgent investment in talent development and training is necessary. In this scenario, local development may face challenges and be less competitive.
2	**Moderate**	The existing workforce gap can be bridged and brought up to expectations through sufficient investment and short-term improvements. Transitioning workers from other industries or from overseas may also support offshore wind development. It is advisable to invest in and develop the resources needed for the offshore wind industry, particularly with a focus on the timeline leading up to 2030.
3	**Mild**	The existing gap in the workforce is relatively limited compared to expectations. The workforce is poised to support stable and healthy offshore wind development in the short term. There is no significant additional support or investment needed for the supply chain, as local industries can naturally develop the workforce through market mechanisms.

Gap analysis for different phases of development

1. **Development phase**

   During the development phase, preparations and planning for offshore wind farms are primarily undertaken by the developer, with support from consultants. This phase encompasses a variety of works, including project development planning, financial and technical preparations such as site selection, feasibility studies, project concept design, and supply chain studies. In contrast to subsequent phases, the development phase primarily consists of office work and some on-site investigations.

2. **Pre-Construction phase**

   Following the development phase, the pre-construction phase involves completing all requirements for project construction, including permits, financing, procurement, and design. At this stage, the workforce demand shifts from project management and studies to technical and engineering roles. While much of the work remains office-based, the technical requirements and qualifications, particularly for specific professions like engineering design, become increasingly crucial. This study has identified a clearer scarcity of the workforce in the Philippines for this phase.

3. **Construction Phase**

   The construction phase is the most important in project development, encompassing planning, execution, monitoring, commissioning, and eventual grid connection. During this phase, the wind farm elements are manufactured, supplied, and installed, including cable connections. The key elements of an offshore wind farm comprise of foundations, towers, turbines, cables, and substation. The manufacturing and installation of these components require a skilled workforce with a high level of technical expertise.

Regarding construction capacity, the workforce gap is more severe in the Philippines. While foundation manufacturing, including tier 1 and tier 2, benefits from the existing steel structure industry's readiness, it still requires additional training and investment due to a lack of direct experience. Other key parts and components of the wind farm are likely to face challenges and barriers due to the high standards and requirements of international suppliers. The existing workforce is unlikely to be qualified without further training. Additionally, the Philippines' electrical, electronic, and mechanical engineers and technicians are insufficient to fulfill the workforce needs to realise more than 1GW of offshore wind farms. Therefore, investment and cultivation in these areas may be crucial for the healthy and stable development of local offshore wind-related industries.

4. **O&M phase**

The O&M phase is the longest stage of a wind farm which commonly lasts for more than 20 years. Based on experience from international markets, this phase principally relies on local employees in charge of day-to-day operations. As there are currently no offshore wind farms operational in the Philippines, the onshore wind sector could provide an initial workforce to transition to offshore wind farms. However, significant training and investment are needed to meet long-term needs. The workforce gap is relatively moderate for the Operations and Maintenance (O&M) phase if maintenance technician training and vessel service upgrades align with the progress of offshore wind development. Additionally, it is anticipated that the development and construction phases will address the workforce needs for the operational phase.

5. **Decommission phase**

Decommission is the last stage of the project cycle for an offshore wind farm. The project owner may also assess the feasibility of extending or repowering the wind farm at this stage. In this stage, the technical and engineering workforce is also essential for executing the work. Globally, there are few decommissioning cases, and none exist in the Philippines. The relevant workforce is expected to develop as offshore wind development in the Philippines progresses, but it is currently challenging to identify adequate, qualified capabilities within the country.

6. **Summary of workforce gap analysis and job access analysis**

The Philippine workforce gap for different phases is summarised below in Table 3.9. The local industries in the Philippines do not specialise in heavy electrical, electronic, and marine engineering and construction. As a result, it is unlikely that these industries will be able to implement LCRs for offshore wind development, particularly for projects of 1.5 GW or more by 2030 in the study areas. There is no direct experience in the offshore wind supply chain or project development within the country. While experience from other renewable energy projects, especially onshore wind projects, and international cooperation projects may provide a capable workforce, the unique nature of offshore wind development presents barriers to direct professional transition. Therefore, substantial training and investment in occupational cultivation are essential to facilitate workforce transitions and prepare new professionals for the field.

Job access depends not only on the labor gap but also on the emergence of real industry and development needs. The scenarios can be set up based on our analysis of the industry's different phases and the workforce gap in the Philippines. In the high LCR scenario, it is clear that the demand for local jobs will be substantial; however, this is unlikely to be met. The low and moderate LCR scenario would be more feasible for analysis. The low local content can create a need for local labor, especially for short-term development services and long-term O&M. In a moderate local content scenario, the foundation or tower fabrication is expected to generate apparent labor demand, which requires a proper training programme to ensure qualification.

Table 3.9

Philippines Offshore Wind Workforce Gap Analysis

Phase	Status	Gap	Main capacity gap	Development potential
Development and planning	Some capability	Moderate	Professionals from other renewable energy projects can transfer some of their skills to offshore wind projects. However, the crucial gap lies in the lack of direct offshore wind experience and knowledge. To meet the needs of 1 GW development, significant training and investment in the local workforce will likely be necessary.	Professional development during the planning and development phase is feasible and has the potential to build fundamental capacity for long-term offshore wind development in the Philippines. Through training and increased project engagement, more qualified employees for relevant roles will likely be developed.
Pre-construction	Limited capability	Severe	The Philippines currently has limited technical and engineering experience in offshore wind, as well as in other large offshore infrastructure projects. Furthermore, the legal and commercial sectors lack the necessary credentials to engage in offshore wind projects without international assistance directly.	In the short term, it will be relatively challenging for local talent to take on technical and engineering roles in a major capacity. Investment is required to cultivate local engineering design capability. To expand the local engineering capacity, it is suggested that offshore wind industry and local universities collaborate to establish offshore wind relevant courses or training programmes. Offshore wind involves various engineering disciplines, but a good starting point is civil (structural and geotechnical) engineering, electrical engineering, and mechanical engineering. Some Philippine universities with strong engineering capabilities are listed below: • University of the Philippines • Mapúa University • De La Salle University • Ateneo de Manila University • University of San Carlos • Mindanao State University • New Era University • University of Santo Tomas • Technological Institute of the Philippines • FEATI University • Bicol University

Table 3.9 continued

Philippines Offshore Wind Workforce Gap Analysis

Phase	Status	Gap	Main capacity gap	Development potential
Construction	Limited capability	Moderate to Severe	The experience and credentials in offshore wind construction in the Philippines are very limited, but there is an opportunity to attract some overseas Filipino workers to return to the country. The WTG and offshore substation-related manufacturing and installation need to follow the key suppliers' qualification requirements, which makes it more challenging to use a local workforce in the short term. Similarly, tier-1 manufacturing is unlikely to be fulfilled by the current workforce, but some of the components from Tier-2 suppliers may be partially covered by local suppliers.	The development of a local supply chain depends on government support, but it will take time to cultivate the needed capabilities. Foundation and its components may have relatively more potential for investment by the existing steel industry, along with some of the existing workforce. However, investment and training for local structural, machinery, and electrical engineers are necessary to fully develop the supply chain. It is essential to build local offshore safety training centres to provide sufficient capacity as safety training is the basis for working offshore. Both Taiwan and Japan have established 4 GWO-certified safety training centers to meet the demand for offshore wind.
O&M	Some capability	Moderate	Professionals from the power sector and onshore wind projects are likely to contribute to offshore wind Operations and Maintenance (O&M) work. However, there is a crucial gap in the techniques and qualifications required for offshore Wind Turbine Generator (WTG) maintenance. Additionally, vessel services need to be improved to meet the specific requirements for offshore O&M activities. It is essential to build local offshore safety training center(s) to provide sufficient capacity as safety training is the basis for working offshore.	There is capacity for Operations and Maintenance (O&M) works to be primarily carried out by local technicians. To support this, the government and developers should provide relevant training programmes to cultivate the local workforce.
Decommission	Limited capability	Severe	The Philippines lacks offshore wind decommissioning experience, resulting in a limited workforce for this task.	Experience with decommissioning activities is very limited on a global scale. The Philippines will have the opportunity to learn from other markets. It is also likely that talent cultivated for earlier stages of OFW development will be better prepared for decommissioning; however, there is currently no capacity.

4.

International Case Study and Best Practices

Japan

Policy and market development

Japan's offshore wind power governance has been reshaped by the enactment of the Act on Promoting the Utilization of Sea Areas for the Development of Marine Renewable Energy Power Generation Facilities (再生可能エネルギー海域利用法, hereafter, "Marine Renewables Sea Area Act"), which established a new institutional foundation for large-scale deployment. This Act established a structured process for designating specific sea areas as promotion zones (促進区域), embedded mechanisms for stakeholder coordination, and a competitive tendering regime. It represents a decisive break from earlier fragmented regulatory frameworks and has had three major impacts:

1. **Designation of Promotion Zones and Long-term Occupancy Rights:** The Act enables the national government to designate specific sea areas as promotion zones for the development of offshore wind projects. Developers selected through tenders are granted exclusive rights of occupancy and use for up to 30 years, providing stability and investment certainty not available under previous regulations.

2. **Consultative Councils for Zone Designation and Local Coordination:** A statutory consultative council (法定協議会) must be established for each candidate area prior to designation. These councils bring together local fisheries groups, municipalities, prefectural governments, and relevant ministries to facilitate early-stage dialogue and conflict mitigation, particularly regarding marine resource use and community impacts.

3. **Auction Selection Based on Project Content and Power Supply Price Bidding:** Tender evaluation incorporates both the technical and operational content of project proposals and the electricity supply price offered. This has introduced cost competition, fostered transparent selection, and incetivised developers to design efficient projects with stronger community engagement.

Table 4.1

Evolution of Legal and Institutional Framework for Offshore Wind in Japan

Year	Legal Instrument	Scope / Limitations	Key Outcomes
2002	Basic Act on Energy Policy (エネルギー政策基本法)	Established overall energy policy direction; emphasised renewable energy but no specific offshore wind framework.	Foundation for policy development.
2016	Ports and Harbors Law Revision (港湾法改正)	Allowed offshore wind projects within port areas for long-term use. Restricted to port-administered zones.	Enabled early commercial projects, but the scope was limited to port waters.
2018	Marine Renewables Sea Area Act (再生可能エネルギー海域利用法)	Designation of promotion zones; consultative councils; public tender system; long-term occupancy rights (up to 30 years).	Comprehensive national framework for offshore wind outside ports; cornerstone law.
2024	Amendment to Marine Renewables Sea Area Act	Extended applicability to Japan's Exclusive Economic Zone (EEZ).	Opened pathway for large-scale and floating projects in deeper waters.

The Marine Renewables Sea Area Act requires that each promotion zone establish a local consultative council—a statutory forum for multi-stakeholder dialogue (See Figure 4.1). By law, these councils serve as the central mechanism for coexistence and benefit sharing, with three defining features:

- **Mandatory Membership and Representation:** Councils must include representatives of national ministries, prefectural and municipal governments, local fisheries associations, and other stakeholders. Other users and experts may also participate. This ensures both top-down (state → local) and horizontal (government ↔ community ↔ industry) representation.
- **Legally Binding Outcomes:** Councils deliberate on local development priorities—such as employment, fisheries coordination, tourism, and environmental safeguards—and issue "Compiled Opinions of the Council." These opinions are formally recorded, publicly accessible, and legally binding on all members, including developers who later join after winning tenders.
- **Concrete Effects on Benefit Sharing:** Council decisions translate into enforceable expectations within tender conditions and contracts. Examples include local hiring targets, port facility upgrades, fisheries compensation formulas, seasonal operation restrictions, education and training programmes, and community investment initiatives.

In short, councils are not merely consultative bodies but statutory institutions whose decisions developers must respect, ensuring that benefit sharing is transparent, enforceable, and responsive to local needs.

Figure 4.1

From project formation to Promotion Zone & Developer Selection

Japan has set offshore wind power as a central pillar of its decarbonisation strategy, aiming for 10 GW by 2030 and 30–45 GW by 2040, with a longer-term vision of several tens of GW by mid-century. As of mid-2025, offshore operating capacity remains modest at under 0.5 GW, but multiple large-scale projects are under construction or in advanced development under the Marine Renewables Sea Area Act framework.

Japan's offshore wind tendering has proceeded in three main rounds.

- **Round 1 (2021):** The first state-led public tenders for fixed-bottom offshore sites targeted three designated promotion zones. A consortium led by Mitsubishi Corporation secured all three sites at strikingly low prices, signaling a decisive step toward commercial-scale deployment under the centralised government-led model. However, the bids proved difficult to sustain, sparking calls for regulatory adjustments. In 2025, Mitsubishi announced its withdrawal from the projects due to surging costs.
- **Round 2 (2021–2024):** This round focused on the Noshiro area in Akita Prefecture. The initial tender concluded in 2022 but was temporarily cancelled, halting the Environmental Impact Assessment.[2] The tender resumed later that year, and a consortium led by ENEOS Renewable Energy (ERE) secured the project. Onshore construction is scheduled to commence in January 2026, followed by offshore foundation work in May 2027, with operations anticipated to begin in 2029.
- **Round 3 (December 2024):** The government identified approximately 1.1 GW in two promotion zones in the southern Japan Sea off Aomori Prefecture and Yuza Town in Yamagata Prefecture. The auction was completed in December 2024, and the projects of JERA and Marubeni-led consortia are selected.

[2]外部スタッフ石黒. "【第2ラウンド動向】 秋田県八峰町、能代市沖 今月中に事業者選定へ - ウインドジャーナル | 風力発電のビジネス情報サイト." ウインドジャーナル | 風力発電のビジネス情報サイト - ウインドジャーナル | 風力発電のビジネス情報サイト, 8 Mar. 2024, https://windjournal.jp/119662/. Accessed 25 Sept. 2025.

Economic Outcome

Japan's offshore wind industry remains nascent, with limited projects in operation or under development. Nonetheless, Japan is recognised as having significant offshore wind potential, and the development can bring a positive impact on the economy and society. Government and independent modelling show meaningful macroeconomic and employment ripple effects from a robust offshore wind programme.[3] Scenario estimates indicate a pathway where cumulative offshore capacity rises to multiple tens of GW by mid-century, producing the following impacts:

Table 4.2

Japan Offshore Windfarm Economic Benefits

Impact Category	Key Factors
GDP Ripple Effects	• Large single-year impacts during peak deployment years (USD 0.8–1.1 billion). • Cumulative contribution estimated in the tens of billions USD over coming decades. • Positive multiplier effects across local industries (construction, steel, ports, shipbuilding).
Employment Creation	• 10,000+ direct and indirect jobs during peak construction years. • Cumulative employment effects reaching 100,000 to over 1,000,000+ job-years by 2050. • Includes high-value engineering and manufacturing roles, as well as indirect service, logistics, and supply-chain jobs.
Industrial & Regional Development	• Expansion of domestic fabrication facilities and supply-chain localisation. • Port infrastructure upgrades benefiting broader maritime and trade activities. • Increased demand for R&D, professional services, and workforce training, stimulating regional innovation clusters.
Cost Trajectories	• Declines in CAPEX per kW and OPEX per kW-year driven by scale and learning effects. • Lower cost of electricity over time, enhancing competitiveness against fossil fuels. • Technology transfer and productivity gains spilling into adjacent sectors (maritime, energy storage, hydrogen).
Long-Term Strategic Impacts	• Enhanced energy security by reducing reliance on imported fossil fuels. • Contribution to net-zero targets and carbon reduction commitments. • Potential export opportunities for Japanese offshore-wind expertise, technology, and services.

Beyond macro numbers, the government has strategically mobilised R&D funding and industrial policy instruments to strengthen domestic capability—particularly for floating offshore wind, which is essential given that much of Japan's high-quality wind resource lies in deep water. The Philippines floating wind potential similarly outstrips its fixed bottom areas as in Japan. To enhance competitiveness and ensure long-term value creation, Japan has pursued a coordinated approach that couples technological innovation with economic industrialisation:

- **NEDO / Green Innovation Fund investments:** NEDO's Green Innovation Fund supports technology development and demonstration projects, including cost-reduction programmes for floating foundations, mooring systems, and low-cost installation methods. Public commitments in this programme aggregate into tens of billions of yen in direct support for demonstrators and industrialisation pathways.

[3] Socioeconomic Analysis of Offshore Wind Power Development in Japan. Renewable Energy Institute, Dec. 2022.

- **Public–private demonstrations and consortia:** Multiple consortium projects (Aichi, Akita, Goto Islands, and other demo sites) partner major trading houses, heavy industry, shipyards, and utilities to deploy demonstration arrays and test domestic manufacturing and installation workflows.
- **International collaboration:** Japan has committed funds and technical collaboration (e.g., U.S., Denmark) to accelerate floating wind cost declines and transfer lessons from established markets.

Collectively, these interventions are intended to (a) reduce CAPEX/OPEX through technology iteration, (b) increase domestic supply-chain share, and (c) create local jobs and industrial capacity that are durable beyond construction. In addition to national-scale benefits, local economies gain from port modernisation, supplier development, and tourism, reinforcing the sector's role as a catalyst for regional revitalisation.

Japan Socio-Economic Benefit Sharing

Social Benefit Mechanisms and Outcome

Japan does not have a mandatory fishery compensation mechanism in place for offshore wind development. Instead, benefit sharing has been pursued through legally mandated consultative councils (法定協議会) established under the Marine Renewables Sea Area Act, where government, industry, academia, and local communities, especially fisheries cooperatives, jointly discuss project impacts and possible mitigation measures. Developers often commit to community contributions because tender evaluation criteria explicitly reward proposals that demonstrate regional and port-related benefits.[4]

Table 4.3

Role of Fisheries Cooperatives at Each Stage

Stage	Role of Fisheries Cooperatives
Conduct council	• Coordinate with stakeholders on promotion zone designation • Define public bidding points: zone location & size, construction schedule & methods, fisheries cooperation & impact assessment • Council-agreed opinions reflected in public bidding guidelines
Promotion Zone designation	• One of the designation criteria is that "it is not expected to cause any disruption to fishing."
Establishment of public recruitment guidelines	• Matters agreed upon by the council will be listed in the public occupancy guidelines
Business operator selection	• Assess impacts of regional coordination, including fisheries cooperation measures • Solicit and respect opinions from the relevant prefectural governor
Business plan approval and occupation permit	• Selected developers become council members • Occupancy permit requires consent from relevant fisheries (council members)

[4]響灘洋上風力発電施設の設置・運営事業者の公募について." 北九州市, , 26 May 2025, www.city.kitakyushu.lg.jp/contents/30300004.html . Accessed 23 Sept. 2025.

Case A: Goto City Floating Offshore Wind Project (長崎県五島市沖浮体式洋上風力発電事業)

The Goto City Floating Offshore Wind Project is Japan's first commercial scale floating offshore wind initiative. The project is developed by Goto Floating Wind Farm LLC (五島フローティングウィンドファーム合同会社), a special-purpose company led by Toda Corporation.[5]

Table 4.4

Overview of Goto City Floating Offshore Wind Project

Category	Information
Project	Goto City Floating Offshore Wind Project
Location	Goto Islands, Nagasaki Prefecture
Installed Capacity	16.8 MW (8 turbines × 2.1 MW each)
Construction Start	July 2020
Planned Operational Period	January 2026 – December 2043
Developers / Key Participants	NEDO, Toda Corporation, local utility partners

This flagship project symbolises Japan's transition from demonstration to commercial development of floating wind technology, while also serving as a testbed for community benefit-sharing frameworks.

The municipality embedded social benefit into its local governance by establishing the Goto City Zero Carbon City Realization Council (五島市ゼロカーボンシティ実現協議会).[6] This body, created through municipal ordinance, explicitly mandated the creation of community–fishery coexistence funds, ensuring their legal durability and transparency. The consultative council for the Goto project included representatives from the Ministry of Economy, Trade and Industry (METI), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the Fisheries Agency, local government, fisheries cooperatives, and the project developer (Goto Floating Wind Farm LLC led by Toda Corporation). Several benefit-sharing measures were institutionalised through this process:

- **Regional Development Fund ("Offshore Wind Dream Fund"):** Financed by all offshore wind developers (including construction contractors, cable suppliers, etc.) and Goto City's general budget, this fund is scheduled to operate for 20 years starting in 2024, has not yet commenced operations because the wind farm construction is still underway. The Fund supports:
    - ◊ Youth capacity building, including overseas training subsidies.
    - ◊ Environmental initiatives such as EV adoption.
    - ◊ Disbursement is application-based, ensuring that residents can directly access the benefits.
    - ◊ Part of the fund will be used directly for the wellbeing of the community.

[5] "16.8MW 長崎県五島市沖浮体式洋上風力発電プロジェクト.", J-WIND Times, 28 Jan. 2025, https://deepwind.jp/projects/jp-goto-city-offshore-floating-wind-power-project/ . Accessed 25 Sept. 2025.

[6] "なっとく！再生可能エネルギー｜資源エネルギー庁." 2025, www.enecho.meti.go.jp/category/saving_and_new/saiene/yojo_furyoku/kyougi.html . Accessed 23 Sept. 2025.

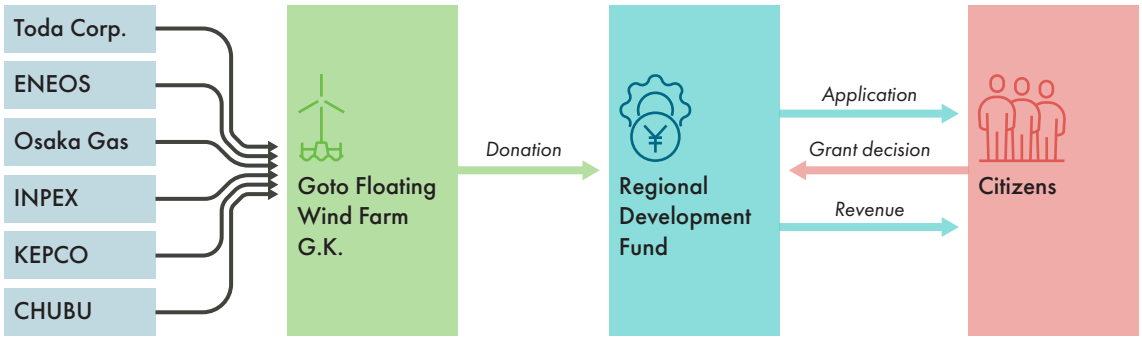


Figure 4.2

Regional Development Fund – Funding Sources and Uses

- **Fishery Promotion Fund:** A separate fund was created to support the long-term viability of local fisheries. Financed by all offshore wind developers and overseen by the municipal government, this fund is dedicated to supporting the long-term viability of local fisheries. Planned measures include:
  - ◊ Subsidies for fishing vessel insurance premiums.
  - ◊ Financing other initiatives that contribute to fishery revitalisation.
  - ◊ Funds are disbursed via municipal oversight, based on applications from fisheries cooperatives.

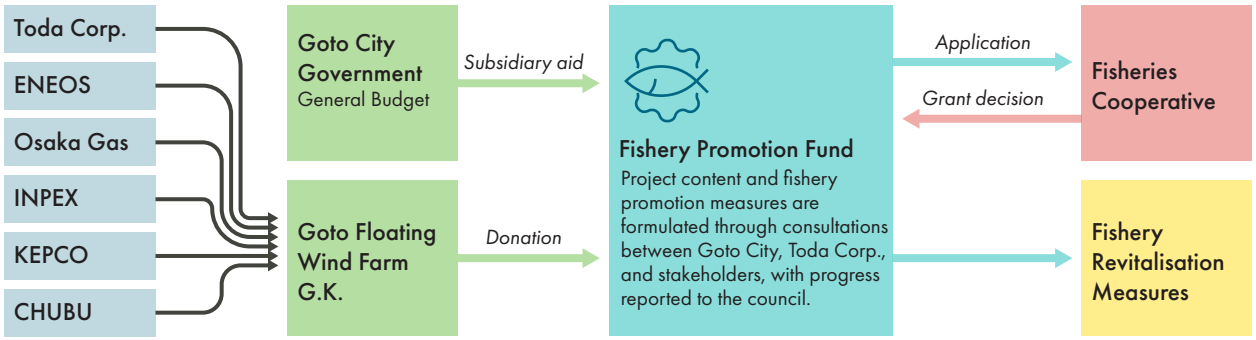


Figure 4.3

Fishery Promotion Fund – Funding Sources and Uses

Under the ongoing Consultation and Impact Monitoring, the council also agreed to:

- Carry out fish catch trend surveys and "test operations" with guidance from local cooperatives.
- Hold explanatory meetings when construction delays affected local operations.
- Continue environmental monitoring of noise, turbidity, and impacts on birds and fish throughout the construction phase.

Case B: Yuza Offshore Wind Power Project (山形県遊佐沖洋上風力発電事業)

The Yuza Offshore Wind Power Project is one of Japan's largest fixed-bottom offshore wind initiatives, planned off the coast of Yuza Town in Yamagata Prefecture. The project is developed by Yuza Offshore Wind GK (山形遊佐離岸風電有限責任会社), a special purpose company formed by a consortium of major energy players.

Table 4.5

Overview of Yuza Offshore Wind Power Project

Category	Information
Project	Yamagata Yuza Offshore Wind Power Project
Location	Offshore Yuza Town, Yamagata Prefecture
Installed Capacity	450 MW (30 turbines × 15 MW each)
Construction Start	November 2027
Planned Operational Period	June 2030 – 2055
Developers / Key Participants	Yamagata Yuza Offshore Wind LLC; consortium includes Marubeni, Kansai Electric Power, Tokyo Gas, Marutaka Corporation

In accordance with Article 9 of the Marine Renewables Sea Area Act, the Yuza Offshore Wind Council (遊佐沖協議会) was established. This body brings together representatives from the Ministry of Economy, Trade and Industry (METI), Agency for Natural Resources and Energy, Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Fisheries Agency (MAFF), Yamagata Prefecture and Yuza Town, local fisheries cooperatives and salmon hatchery associations, and academic and research institutions.

Institutionalised measures emerging from the consultation process include:

- **Fisheries coexistence and revitalisation measures:** Strategies to mitigate impacts on coastal and inland fisheries, including support for oyster cultivation, salmon hatchery enhancement, fishery port upgrades, and branding of Yuza seafood products.
- **Regional revitalisation initiatives:** Commitments to local employment, collaboration with schools and research institutions for training programmes, and exploration of offshore wind tourism and educational activities.
- **Long-term monitoring and adaptive management:** Regular surveys of fish stocks, seabed environment, and ecosystem impacts; continued dialogue with fisheries cooperatives; and adjustment of mitigation measures as needed.

The examples illustrate Japan's approach to offshore wind social benefits: using statutory councils to institutionalise consultation, fund creation, and ongoing monitoring, thereby fostering coexistence between renewable energy development and local fisheries, while delivering broader regional development outcomes.

Taiwan

Policy and market development

Taiwan's offshore wind development is primarily governed by the Renewable Energy Development Act (REDA), which provides the legislative foundation for renewable energy promotion and prescribes incentives, purchase obligations, and compliance requirements for large electricity users. Complementing this, the *Environmental Impact Assessment Act (EIA Act)* ensures that offshore wind projects undergo rigorous environmental review, addressing marine ecology, fisheries, and community concerns before construction.

The government had established clear offshore wind capacity targets—5.7 GW by 2025, with additional large-scale releases planned through 2035—and structured development into three phases: demonstration projects, potential site allocation, and large-scale zonal development. Earlier requirements for high levels of local content in the supply chain, intended to stimulate domestic industry, have recently been adjusted in response to international trade concerns and cost competitiveness issues.

Offshore wind policy in Taiwan is characterised by its various rounds or phases of offshore wind allocation and development. Notably, there has been no robust legislative oversight or regulation of OFWs, resulting in the permitting framework evolving with each round. As a result, each phase (Taiwan is now entering Round 3.3) features slightly different regulatory arrangements.

- **Round 1**

  The origins of Offshore wind development in Taiwan can be traced back to 2005 with the commencement of its plan for 'model zone/demonstration sites', also known as Round 1. In Round 1, the government identified model sites for OFW development, allowing developers to bid on the pre-selected sites. Round 1 was a test and demonstration approach to assess feasibility, provide a better technical understanding, and develop an effective permitting regime for OFW. Slow to start, this round concluded with Formosa I (128MW) connecting to the grid in 2019, and Taipower I (109.5MW) connecting in 2021. The third allocated development from Round 1 (Fuhai) did not come to fruition.

- **Round 2**

  Following Round 1, Taiwan's Ministry of Economic Affairs (MOEA) rolled out Round 2 in 2018 to commence the development of commercial-scale offshore wind in Taiwan. The MOEA designated 36 OFW zones as potential areas for growth, based on available wind models, spatial data, and assumptions regarding the use of marine spatial planning, for interested parties. The zones were not subject to comprehensive marine special planning or associated strategic environmental assessment, resulting in some zones being withdrawn at various stages of their development, including one instance in which an already awarded project was required to forfeit its site. Developers were also allowed to propose their own project sites outside of the 36 designated zones. Round 2 culminated with the award of 11 projects with a cumulative allocated capacity of over 5.5 GW.

Additionally, in 2025, one of the Round 2 awardees was terminated for failing to commence development within the prescribed timeline. As of Summer 2025, 3GW are installed and last projects are expected to be finished in 2026/27 at the latest.

- **Round 3**

  Since 2022, Round 3 adopted a developer-led site proposal approach, requiring developers to propose project sites to the Energy Administration (EA). To reduce spatial conflicts, a new step, "site recordation," was introduced in the Direction for the Application for Offshore Wind Development Zones, mandating early engagement with relevant permitting agencies.

  As of Q1 2023, Taiwan has completed its auction for Round 3.1, while the Round 3.2 auction has been completed in Q1 2024. The Round 3.3 selection process has not yet been announced and is currently under regulatory design. After the European Union logged a complaint against Taiwan to remove its localisation policies, Round 3.3 is expected to shift its evaluation focus from local content requirements toward technical and financial capabilities.

Economic outcome

The rapid expansion of offshore wind in Taiwan has brought substantial economic benefits across multiple sectors. Since 2016, the industry has evolved from a nascent market into one of Asia's most dynamic renewable energy hubs, driven by both government policy and private investment. The main economic impacts are summarised in Table 4.6.

Table 4.6

Taiwan Offshore Windfarm Economic Benefits

Category	Key Impacts
Industrial Development	• Expansion of domestic fabrication facilities and supply-chain localisation, supporting 18,000+ jobs by 2023 and projected 37,500 – 52,600 jobs by 2030–2040. • Port infrastructure upgrades, including the domestically built Green Jade vessel, benefiting broader maritime and trade activities. • Increased demand for professional services, workforce training, and maritime engineering capabilities, stimulating regional innovation clusters.
Investment & Manufacturing Output	• Cumulative manufacturing investments of approximately USD 2.4 billion (2018–2024) with an output value of around USD 3.0 billion, fostering domestic industrial growth. • Projected investments of roughly USD 3.0 billion per 500 MW (2026–2035), driving capital inflows and supply chain maturation. • Supports technology transfer, skills development, and productivity gains across related sectors.
Employment	• Significant job creation: direct 18,000 jobs (2016–2023), 37,500 jobs by 2030, and 52,600 jobs by 2040. • Expands talent pool in offshore wind manufacturing, maritime engineering, R&D, and maintenance services. • Promotes long-term capacity building for deep-water offshore wind development.
Long-Term Strategic Impacts	• Enhance energy security by reducing reliance on imported fossil fuels. • Contributes to Taiwan's net-zero targets and carbon reduction commitments. • Positions Taiwan as a potential exporter of offshore wind expertise, services, and technology in Asia.

[7] "離岸風電三階段政策." 工業技術研究院-風力發電單一服務窗口." ,www.twtpo.org.tw/intro.aspx?id=4590. Accessed 3 Oct. 2025.

[8] 丘采薇. "風電產業紅色警戒3》國產化政策鬆綁　郭智輝：「我已經答應WTO了！」." 財訊 1 Aug. 2025, https://reurl.cc/x3qNaz. Accessed 3 Oct. 2025.

A deliberate focus on research, development, and innovation underpins these macroeconomic and industrial gains. Public and private investment in offshore wind technology has not only reduced costs and improved efficiency but also strengthened Taiwan's domestic supply chain and technical capacity. As the sector matures, targeted R&D initiatives—ranging from turbine optimisation and floating foundation technologies to workforce training and industrial demonstrations—play a critical role in sustaining economic momentum, enhancing competitiveness, and preparing the industry for larger-scale deployment in the coming decades. Actions are mainly driven by the Ministry of Economic Affairs (MOEA) and the Metal Industries Research & Development Centre (MIRDC). The key focus areas and actions are summarised in the table below.

Table 4.7

Taiwan Offshore Wind's R&D, Innovation, and Investment

Stage	Key Actions / Focus
R&D & Technology Development	• Promote low-carbon manufacturing for offshore wind. • Conduct product carbon footprint audits to reduce industrial emissions. • Advance predictive maintenance and AI-based monitoring systems.
O&M Innovation	• Transition toward automated and unmanned O&M operations. • Develop digital twins, autonomous inspection, and robotic maintenance technologies. • Prioritise predictive maintenance to reduce Levelised Cost of Energy.
Industrial Support	• Provide technical guidance and financial support for green process upgrades. • Public–private co-funding.
Human Capital & Training	• Offer government-subsidised training (80%) for NDT and carbon footprint certification. • Build professional capacity across supply chain and O&M sectors.
Investment Opportunities	• Focus on predictive maintenance platforms, autonomous systems, and digital analytics. • Government invests in low-carbon manufacturing, port logistics, and technical certification services.

Socio-economic benefit sharing

Social Benefit Mechanisms and Outcome

Since the inception of its offshore wind (OFW) development, Taiwan has pursued a strong localisation strategy led by the Energy Administration (EA) and the Industrial Development Administration (IDA). The IDA has been consistent in its objective to foster a robust domestic offshore wind supply chain and to position Taiwan as a key supplier within the broader Asian OFW market.

According to recent estimates from the EA, an additional 3 GW of installed capacity expected over the next two years will generate a local output value of approximately NT$261.4 billion (US$8.3 billion) and create around 29,450 new jobs.

At the same time, Taiwan's OFW policy also emphasises engagement with local stakeholders. Regulations require developers to provide financial contributions and community benefit mechanisms to local communities. In June 2025, the government further amended the Regulations on the Use and Supervision of Electricity Development Assistance Funds (電力開發協助金運用與監督管理辦法) and other methods shown below to enhance benefit-sharing schemes and ensure more transparent and equitable local participation.

Table 4.8

Taiwan Benefit Sharing Mechanisms

Legal Basis	Main Requirements
Regulations on the Use and Supervision of Electricity Development Assistance Funds (電力開發協助金運用與監督管理辦法)	• Developers must allocate subsidy-type and project-based payments (電協金) to local governments, fisheries associations, and approved NGOs. • Funds must directly benefit communities near offshore wind and grid facilities.
Environmental Impact Assessment Act (環境影響評估法)	• Developers are required to prepare an EIA report/statement and publicly announce, post notices for at least 30 days, and hold on-site public hearings or explanatory meetings. • Hearing and site inspection records must be submitted within deadlines and form part of the official review.
Fisheries Compensation Standards for Offshore Wind Farms (離岸式風力發電廠漁業補償基準)	• Defines formulas for calculating compensation (see table) with the total = (OC + CC + IC) × (1 + 10%). • Compensation must be negotiated with local fisheries associations; if no agreement is reached after three rounds, a government-appointed expert panel decides. • Developers must also pay a "Co-existence and Prosperity Fee" (共存共榮費) (NT$200,000 per MW), disbursed 70% before the construction permit and 30% before the electricity license, to support fishery rehabilitation, facility upgrades, and fishing method adjustments.
Non-national Workboat Port-Access Operational Rules (非本國籍工作船申請停泊國際商港以外之其他港灣口岸作業要點)	• Foreign offshore workboats need to employ at least 30% of Taiwanese crew or pay sea crew cultivation funds. • Developers may submit a domestic crew training plan, subject to government approval, to reduce this quote.
Industrial Relevance Programme (離岸風力發電區塊開發產業關聯方案)	• Zonal development tenders use a scoring system: at least 60% of core components (e.g., foundations, nacelles) must be localised, with the remaining 40% treated as bonus points. However, although this requirement stimulated local supply chain growth, it was later deemed problematic by the supervisory authorities as bringing challenges for stable OFW development. • Localisation performance influences tender selection. • The Ministry of Economic Affairs audits compliance; failure to deliver can result in contractual penalties or administrative measures. • Note: For the upcoming Phase 3.3 auction round, the government has indicated that these localisation requirements may be cancelled to reduce investment barriers and align with international trade rules.

Cases: Standard Benefit-Sharing Mechanisms for Taiwanese Offshore Wind Farms

Under national regulations in Taiwan, all offshore wind developers are required to implement similar monetary and non-monetary community-benefit mechanisms. To respect commercial confidentiality while illustrating the standard approach, this case has been presented in a generalised manner. It reflects the standard practices mandated under Taiwanese law, rather than the actions of a specific company, so the generalised benefit-sharing approach is summarised in below.

Table 4.9

Taiwan Offshore Wind Farm Generalised Benefit Sharing Approach

Category	Key Impacts
Local Industry Promotion	**Supply Chain Localisation:** Developers collaborate with local suppliers to establish industrial clusters, including tower fabrication, assembly facilities, and ports for heavy-lift operations.
	Employment Creation: O&M centers employ majority local workforce, providing long-term jobs in engineering, logistics, and operations.
	Skills & Talent Development: Partnerships with local universities and vocational programmes deliver classroom training, offshore certification, and apprenticeship opportunities.
Monetary Benefit Sharing	**Fisheries Compensation:** In accordance with the Taiwan Fisheries Act (Article 29), compensation covers loss of fishing rights (C1), detour costs (C2), net revenue loss (C3), cable impact (CC), and income loss during relocation (IC), with an additional 10% buffer.
	Nearshore Sustainable Development Fund & Electricity Development Assistance Fund: Support local community projects such as environmental protection, social welfare, education, and elderly care. According to Regulations on the Use and Supervision of Electricity Development Assistance Funds, 70% of the fund is distributed as direct subsidies to local governments, while 30% is allocated as project-based assistance to NGOs, schools, and local associations.
	Coexistence & Prosperity Fee: Investments in community development, cultural preservation, environmental protection, and education, coordinated with local fisheries before project construction.
Non-Financial Community Engagement	**Environmental Supervise Committee:** Exceeds standard EIA requirements; committee members provide advice and feedback on environmental and community impacts.
	Youth & Fisheries Engagement: Training programmes such as marine safety workshops, equip local youth and fishers with offshore wind skills.
	Education & Outreach: Science workshops introduce renewable energy concepts to school children, promoting environmental awareness and green energy literacy.

Mainland China

Policy and market development

China is the largest single OFW market globally, with clusters concentrated along the eastern and southern coastlines. Under the "14th Five-Year Plan" (2021-2025) for Renewable Energy Development, China has emphasised the strategic importance of offshore wind. By the end of 2020, installed wind power capacity had reached 280 GW, and the plan identified the creation of five 10-GW-level offshore wind clusters in the Shandong Peninsula, the Yangtze River Delta, Southern Fujian, Eastern Guangdong, and the Beibu Gulf, forming the backbone of China's offshore wind expansion.[9]

The governance of offshore wind power in China is coordinated across multiple government agencies to ensure orderly development and environmental protection. The National Energy Administration (NEA) is responsible for the overall planning, approval, and supervision of offshore wind projects nationwide. Provincial energy authorities, under the guidance of the NEA, manage projects within their respective jurisdictions.

From 2010 to 2020, China supported offshore wind development through a series of policies including concession-based tendering, feed-in tariff benchmark pricing, and competitive bidding. Entering the "14th Five-Year" period, the industry has transitioned into a subsidy-free stage for new projects. According to the Opinions on Promoting the Healthy Development of Non-Hydro Renewable Energy, newly commissioned offshore wind projects after 2022 are no longer eligible for central government subsidies. However, several provinces and municipalities introduced local subsidy schemes. As of 2022, some of the key OFW provinces, including Guangdong, Shandong, Zhejiang, and Shanghai, have implemented the following support measures:

[9] 中华人民共和国国家发展和改革委员会. "十四五"可再生能源发展规划. 1 June 2022, www.ndrc.gov.cn/xwdt/tzgg/202206/t20220601_1326720.html. Accessed 20 Oct. 2025.

Table 4.10

Regional Government Incentive Schemes for Offshore Wind Power in China

Province/City	Subsidy Policy
Guangdong	Projects fully connected in 2022, 2023, and 2024 receive 1,500, 1,000, and 500 RMB/kW respectively
Shandong	Projects commissioned 2022–2024 receive 800, 500, 300 RMB/kW respectively, with annual subsidy caps of 2 GW, 3.4 GW, and 1.6 GW
Zhejiang	Projects in 2022–2023 enjoy province-level subsidies for 0.03 and 0.015 RMB/kWh, capped at 60 MW and 150 MW, for 10 years starting the second year of full commissioning
Shanghai	Offshore projects >50 km from shore or deepwater projects (2022–2026) rewarded 500 RMB/kW, annual cap of 50 million RMB per project

Regulatory management is governed primarily by the Administrative Measures for Offshore Wind Power Development and Construction, which is based on the Administrative Licensing Law, Renewable Energy Law, Sea Area Use Management Law, Marine Environmental Protection Law, and Island Protection Law. Key provisions include:

- **Pre-approval for sea area usage:** Developers must submit a sea area pre-review application to the marine administrative department before project approval. The department issues a sea area pre-review opinion to ensure compliance with ecological and regulatory requirements.
- **Legal acquisition of sea area usage rights:** Construction may only begin after legally obtaining sea area usage rights.
- **Allocation mechanisms:** Under the Sea Area Use Management Regulations, rights are allocated via application, tendering, or auction, with tenders or auctions required if multiple parties are interested in the same sea area.
- **Enhanced oversight:** The Ministry of Natural Resources' 2024 notice reinforces stricter management, requiring coordination between energy and marine authorities to maintain sustainability and ecological protection.

China aims to significantly expand its offshore wind capacity over the next several decades. The recently released "Beijing Wind Energy Declaration 2.0" (2025) sets ambitious new national targets: during the 15th Five-Year Plan period (2026–2030), China may add 120 GW of new wind power annually, including at least 15 GW of offshore wind. The declaration envisions 1.3 TW of cumulative wind capacity by 2030, 2.0 TW by 2035, and 5.0 TW by 2060, positioning offshore wind as a core driver of China's carbon neutrality pathway. China's offshore wind sector has entered a stage of large-scale, market-oriented expansion, underpinned by continuous policy evolution and rapid cost declines. As of March 2025, the country's cumulative offshore wind capacity reached 42.73 GW, including 0.98 GW of new grid-connected capacity in Q1 2025[10], and supply-chain localisation and large-scale deployment have collectively driven significant reductions in cost and capital intensity.

[10] 国家能源局. "国家能源局2025年二季度新闻发布会文字实录." 国家能源局, 28 Apr. 2025, www.nea.gov.cn/20250428/8a71d8aad52945788e9ddd217224eeb3/c.html. Accessed 20 Oct. 2025.

Table 4.11

China offshore wind economic outcome

Category	Key Actions / Focus
Economic growth and production	• In 2024, clean energy sectors, including offshore wind, contributed over 10% to China's GDP, amounting to approximately ¥13.6 trillion (USD $1.9 trillion), marking a record high for the sector's economic impact. • Clean energy investment reached ¥6.8 trillion (USD $940 billion) in 2024, with wind power being a major component, driving substantial economic growth and surpassing real estate sales in value. • China's offshore wind capacity grew from under 5 GW in 2018 to 37.7 GW by 2023, accounting for 50% of the global total, significantly boosting national production capabilities.[11]
Job opportunities	• In the wind power segment in China around 2023, approximately 745,000 jobs were recorded; while dedicated offshore wind data are not separately published, using the 2022 ratio of ~15 jobs per MW and China's about 41 GW offshore installed base suggests an estimated about 820,000 jobs in the offshore wind sector.[12] • Projections indicate that by 2030, China's wind-power industry (onshore + offshore) could support over 2 million jobs, with offshore wind expected to capture a rising share of the high-skill, high-value positions. • Manufacturing expansion (turbines, blades, towers, electrical systems) by Goldwind, MingYang, Envision and others creates significant direct and indirect employment across steel, transport, and logistics sectors.
Industry development	• China plans to add approximately 10 GW, 16 GW, 15 GW, and 15 GW of new offshore wind capacity in 2025–2028, showing sustained large-scale expansion. • The average levelised cost of electricity (LCOE) for China's offshore wind reached RMB 0.33 / kWh in 2023, down 74% from RMB 1.3 /kWh in 2009. The LCOE is expected to decline further to RMB 0.30 /kWh by 2025 due to the use of larger turbines, improved construction methods, and localised production.[13]

[11] Myllyvirta, Lauri. "Analysis: Clean Energy Contributed a Record 10% of China's GDP in 2024." Centre for Research on Energy and Clean Air, Carbon Brief, 19 Feb. 2025, Analysis: Clean energy contributed a record 10% of China's GDP in 2024 – Centre for Research on Energy and Clean Air. Accessed 20 Oct. 2025.

[12] Wang, Tongguang , et al. CWEA Report 2022. Chinese Wind Energy Association, 2022.

[13] 清华大学碳中和研究院. 中国碳中和目标下的 风光技术展望. 清华大学碳中和研究院, Jan. 2024.

Socio-economic benefit sharing

Social Benefit Mechanisms and Outcome

In China, social benefits from offshore wind development are primarily delivered through a top-down governance framework, reflecting the centralised policy and planning structure. At the highest level, the central government sets broad guidelines for benefit sharing, environmental protection, and sustainable development. These policies are communicated to lower levels of government and state-owned enterprises (SOEs), which act as the operational agents implementing these directives on the ground.

Mechanisms of benefit sharing are largely indirect, with local governments acting as primary recipients of economic and social gains, and responsible for further distribution and oversight.

Common benefit-sharing in the China OFW market include:

- **Public participation in planning and siting:** Citizens can engage in offshore wind projects through formal mechanisms such as the Environmental Impact Assessment (EIA) public participation procedures, providing feedback on proposed developments.[14]
- **Local government authority in project siting:** Municipal and provincial authorities evaluate project site selection considering rationality of land and sea use, resource and ecological impacts, fisheries production, overlapping claims, legality of sea use, and implications for national defense, maritime safety, and sovereign ocean rights. These assessments help reduce conflicts over land or sea use and direct developers toward socially and environmentally responsible locations.
- **Economic and infrastructure contributions from developers:** Developers, primarily state-owned enterprises, may provide land-use fees, invest in local infrastructure, and support public amenities as part of project approval conditions.
- **Ecological compensation and fisheries support:** Following the guidance of President Xi Jinping on ecological civilisation and environmental protection, Chinese SOEs are tasked with fulfilling environmental responsibilities during offshore wind development. This includes adhering to the "three simultaneities" principle (simultaneous design, construction, and operation of environmental protection measures) and actively implementing marine ecological restoration programmes in the East China Sea. These programmes, such as fish stock enhancement and habitat restoration, support fisheries productivity, maintain biodiversity, improve marine ecosystems, and ultimately ensure sustainable income for fishers, aligning offshore wind development with long-term environmental and social sustainability.

[14] 生态环境部. "环境影响评价公众参与办法." 风能委员会, 国家能源局, 16 Apr. 2018.

- **Targeted rural and local benefits:** The central government's "Harnessing Wind in Thousands of Villages"(千乡万村驭风行动) initiative actively promotes rural participation and village-level economic gains.[15] Through this programme, policies encourage village-enterprise cooperation, enabling local communities to participate in project ownership, revenue sharing, and decision-making regarding land use. Benefits are distributed in ways that respect local conditions, such as profit-sharing based on equity, land contributions, and human resource inputs. Projects are encouraged to supply electricity locally, supporting rural energy access and sustainable development.

Through this structured approach, China's offshore wind projects demonstrate a policy-driven, centrally guided model of social benefit, where top-level directives are operationalised through state enterprises and local governments, ensuring rural engagement, village-level revenue sharing, environmental protection, and community benefits are systematically considered and delivered.

Case A: Laizhou Offshore Wind and Marine Ranch Integrated Research and Demonstration Project (莱州市海上风电与海洋牧场融合发展研究试验项目)

The Laizhou "Offshore Wind + Marine Ranch" (海上风电+海洋牧场) project is located approximately 11 kilometers off the coast of Laizhou, Shandong Province, in a nationally designated ocean farming demonstration area. The project represents China's first integrated offshore wind and marine aquaculture initiative. The facility has an installed capacity of 304 MW, with 38 × 8 MW wind turbines installed, and was fully commissioned by either the end of 2022.[16] [17], In the first two months of 2024, the project delivered 184.85 million kWh to the grid, with expected annual generation exceeding 1 billion kWh. The adjacent marine ranch supports aquaculture activities, generating nearly RMB 100 million (USD 14 million) annually in fisheries revenue.

Table 4.12

Overview of Laizhou Offshore Wind Power Project

Category	Information
Project	Laizhou Offshore Wind and Marine Ranch Integrated Research and Demonstration Project (莱州市海上风电与海洋牧场融合发展研究试验项目)
Location	Offshore Laizhou, Shandong Province, China (11 km from coast, Bohai Sea)
Installed Capacity	304 MW (38 turbines × 8 MW each)
Construction Start	2022
Planned Operational Period	2023 – 2043 (assumed)
Developers / Key Participants	Joint venture:CGN (China General Nuclear Power Group, 51%) and Shandong Chengyuan Group (49%)

[15] 国家能源局. "国家能源局组织召开"千乡万村驭风行动"现场推进会." 风能委员会, 国家能源局, 1 Nov. 2024, www.cwea.org.cn/news_lastest_detail.html?id=681. Accessed 21 Oct. 2025.
[16] 朱学蕊. "海上风电拓"新"路." 腾讯网, 中国能源报, 18 Aug. 2025, https://news.qq.com/rain/a/20250818A04CGD00?suid=&media_id=. Accessed 21 Oct. 2025.
[17] 中国电力建设集团有限公司. "全国首个！莱州市海上风电项目首批机组并网发电." 国务院国有资产监督管理委员会, 中国电力建设集团有限公司, 2 Dec. 2022, www.sasac.gov.cn/n2588025/n2588124/c26597971/content.html. Accessed 21 Oct. 2025.

The benefit-sharing design integrates offshore wind with marine ranching:

- **Aquaculture zones:** Fish cages, shellfish rafts, and artificial reefs are deployed around wind turbine foundations, forming habitats for fish reproduction and growth.
- **Co-location of energy and aquaculture:** The project generates both electricity revenue and aquaculture income simultaneously, maximising the use of limited marine resources.
- **Careful spatial planning:** Safety zones of 50 meters around turbine foundations and 200-meter maintenance corridors ensure both operational safety and protection of marine ecosystems.
- **Fisheries production outcomes:** In 2024, the project produced 375,000kg of sea cucumbers, with a value close to RMB 90 million, alongside other species including sea bass, mackerel, and octopus, for a total aquaculture output exceeding RMB 100 million.
- **Local economic empowerment:** Village-level participation and revenue sharing mechanisms ensure that both local communities and private enterprises benefit from the project.

Through these measures, the Laizhou project exemplifies a successful benefit-sharing model in China's offshore wind sector, where state policy, local government facilitation, and corporate collaboration converge to deliver both renewable energy and socio-economic benefits to coastal communities.

Case B: Shenquan Offshore Wind Power Project (揭阳市惠来县神泉海上風電專案)

The Shenquan Offshore Wind Power Project is located off the coast of Shenquan Town, Huilai County, Jieyang City, Guangdong Province (揭阳市惠来县神泉镇), developed by State Power Investment Corporation (SPIC) through its subsidiary, SPIC Jieyang Qianzhan Wind Power Co., Ltd. The company, established in March 2019 with a registered capital of RMB 7.2 billion, is responsible for developing, constructing, and operating Jieyang's 900 MW offshore wind project, with a total investment exceeding RMB 40 billion (≈ USD 5.6 billion). The project serves as SPIC's core platform for building a full offshore wind industrial chain in eastern Guangdong.

Shenquan Phase I began construction in 2021 and achieved full-capacity grid connection on November 25, 2021, and the Shenquan Phase II project continues to hold the record for deploying the world's largest 11 MW commercial offshore wind turbine.[18] Each year, the project generates approximately 1,003 gigawatt-hours (GWh) of clean electricity, reducing CO_2 emissions by approximately 780,000 tons.

[18] 神泉海上风电项目首台风机成功安装！." 惠來縣人民政府, 和畅惠来, 27 Apr. 2021, www.huilai.gov.cn/zjhl/hlgkjcss/content/post_537007.html. Accessed 21 Oct. 2025.

Table 4.13

Overview of Shenquan Offshore Wind Power Project

Category	Information
Project	Shenquan Offshore Wind Power Project (Phase I & II)
Location	Offshore Shenquan Town, Huilai County, Jieyang City, Guangdong Province, China
Installed Capacity	900 MW total (Phase I: 500 MW using 5.5 MW turbines; Phase II: 400 MW using 11 MW turbines)
Construction Start	November 25, 2021
Planned Operational Period	2021 – 2046 (assumed)
Developers / Key Participants	State Power Investment Corporation (SPIC) – Jieyang Qianzhan Wind Power Co., Ltd.

The project's benefit-sharing approach is rooted in China's top-down policy system that integrates offshore wind development with regional revitalisation and ecological civilisation. Several key frameworks guide it:

- The "Hundred-County, Thousand-Town, Ten-Thousand-Village High-Quality Development Initiative" (百县千镇万村高质量发展工程) led by the Guangdong Provincial Government, which mobilises central enterprises like SPIC to support rural and local economic development through renewable energy projects.[19]
- The national principle of "Lucid waters and lush mountains are invaluable assets," emphasising ecological protection and sustainable development.[20]
- The National Energy Administration and Guangdong Energy Bureau directives promoting the integration of offshore wind with local industry, infrastructure, and environmental protection.

These policies collectively require SOEs to not only deliver clean energy but also contribute to regional economic revitalisation, ecological restoration, and community welfare. According to these policies, SPIC Jieyang Qianzhan Wind Power Co., Ltd. has implemented a wide range of benefit-sharing measures that align with national and provincial policy objectives:[21]

- **Local Industrial and Employment Development:** SPIC invested RMB 18.9 billion (≈ USD 2.6 billion). to construct the Jieyang Qianzhan Port, the region's first public deep-water port, supporting offshore wind logistics, local employment, and industrial clustering.[22] The port's operation is expected to strengthen the local economy and stimulate related industries significantly.
- **Ecological Restoration and Fisheries Compensation:** For three consecutive years, SPIC carried out marine restocking activities, releasing over 112 million juvenile fish and shrimp into surrounding waters, with an investment of RMB 17.8 million (≈ USD 2.5 million). These actions have enhanced marine biodiversity, restored fishery resources, and improved the ecological health of the Shenquan marine area.

[19] 黃寶儀, and 徐紅. "三年初見成效　看廣東「百千萬工程」的中山實踐 - 大公文匯網." 大公文匯網, 28 Aug. 2025, www.tkww.hk/a/202508/28/AP68afd5ade4b0f2e743949c5b.html. Accessed 21 Oct. 2025.

[20] 和畅惠来．"揭阳前詹风电有限公司：推动产业与生态协同共进." 网易新聞, 和畅惠来, 29 July 2025, bendi.news.163.com/guangdong/25/0729/11/K5KN0KTE04179HUU.html. Accessed 21 Oct. 2025.

[21] 叶绍明. "国家电投广东公司：以绿能优势助推"百千万工程"实施." Southcn.com, 南方网, 5 Sept. 2024, economy.southcn.com/node_f2a526ec7d/289acdf659.shtml. Accessed 21 Oct. 2025.

[22] 吳钦林, and 方思晴. "[龍宮號]入海投運." I自然, 29 Sept. 2025, www.iziran.net/news.html?aid=5426064. Accessed 21 Oct. 2025

- **Offshore Wind and Marine Ranch Integrate:** Additionally, the company is developing an "Offshore Wind + Marine Ranch" demonstration project, with the first heavy-duty fish cage system completed onshore in 2024 and scheduled for offshore installation in 2025, integrating renewable energy with sustainable aquaculture.
- **Local Ecological and Rural Revitalisation Programmes:** SPIC invested RMB 138 million (≈ USD 19 million) to support afforestation and ecological infrastructure construction in Huilai County, contributing to the province's rural revitalisation and environmental enhancement goals. The company also contributed RMB 2 million (≈ USD 280,000) for the greening of Shenquan Town and surrounding coastal areas.
- **Education and Talent Development:** In alignment with the "Hundred-Thousand-Ten-Thousand" initiative, SPIC established a Student Employment and Innovation Base in cooperation with South China University of Technology in July 2025.[23] The base provides internship and research opportunities, professional mentoring, and hands-on training for students in renewable energy and marine engineering, fostering the next generation of clean energy professionals.

Through these integrated measures, the Shenquan Offshore Wind Project demonstrates how a centrally managed state-owned enterprise can translate top-level policy mandates into tangible local benefits. The project not only delivers world-class offshore wind technology and clean energy, but also promotes local employment, rural revitalisation, ecological protection, and educational development.

[23] 卢冰. "华南理工大学与揭阳前詹风电有限公司共建学生就业创业实践基地." 华南理工大学, 14 July 2025, www2.scut.edu.cn/ep/2025/0714/c5228a597723/page.htm. Accessed 21 Oct. 2025.

United Kingdom

Policy and market development

The UK's offshore wind market is underpinned by a strong pipeline of projects and seabed lease auctions under the Crown Estate's authority for the seabed in England, Northern Island, and Wales. Crown Estate Scotland owns and manages the seabed in Scottish territorial waters and the adjacent areas of the UK's Exclusive Economic Zone (EEZ). Alongside the seabed auction, there is Contracts for Difference (CfD) based on the Energy Act 2013, known as the UK government's flagship scheme for procuring high volumes of clean energy at the lowest cost to consumers. CfDs incetivise investment in renewable energy and reduce the cost of capital by providing developers with protection from volatile wholesale electricity prices for 15 to 20 years.

British Energy Security Strategy (BESS) is in charge of formulating localisation policy through its Offshore Wind Acceleration Taskforce, which focuses on streamlining the consenting process of offshore wind development. This policy aligns with the Offshore Wind Sector Deal, wherein the industry has committed to achieving 60% of project lifetime local content in offshore wind projects in the UK by 2030.

According to "Supply Chain Plan Guidance: For projects of 300MW or more applying for a Contract for Difference", originally issued in July 2021 and updated in July 2022 by the Department of Business, Energy, and Industrial Strategy (BEIS), developers have been required to submit supply chain plans (SCP) or Supply Chain Development Plan for CfD applications as the pre-qualification for projects larger than 300MW. The project needs to submit a Supply Chain Plan in the application window to the Secretary of State for BEIS to be qualified for Allocation auctions. Developers must provide plans demonstrating the project's contribution to objects, including: (1) Green Growth: Net Zero and levelling up, (2) Innovation, (3) Infrastructure, (4) Skill.

The UK's Local Content Requirement (LCR) is implemented in a relatively flexible manner, encouraging offshore wind project owners to adopt more local supply chains through long-term planning, a focus on innovation, and infrastructure investment. The government aims to collaborate with developers to achieve "lifetime" and "long-term" targets by 2030. Developers have the option to make alternative contributions towards these objectives, providing flexibility to invest in the UK's economy and industrial development. The government will also continue its trade support programme to identify future inward investment opportunities, based on sector analysis of capacity gaps necessary to achieve the 60% UK lifetime content. Holistic industrial development remains the primary objective of the UK's LCR policy.

The United Kingdom has been developing offshore wind since the early 2000s and is currently the second-largest offshore wind (OFW) market in the world after China. Currently, the UK boasts over 15.6 GW of installed OFW capacity and a project pipeline of 25.5 GW at various project stages.[24] Offshore wind's share of annual UK energy generation increased from 0.8% in 2010 to reach around 10% by 2020. The British Energy Security Strategy (BESS) set the ambition to install up to 50 GW of offshore wind, including 5 GW floating wind, by 2030. This ambition is expected to support up to 90,000 direct and indirect jobs in the UK and is part of a wider £100 billion private investment required to meet the UK's net zero goal. The UK is a proven case for the co-benefits of offshore wind and green economic development, which attract new business, investment, and exports.

In September 2024, the Allocation Round 6 (AR6) secured 5.3 GW of offshore wind around £58.87/MWh (USD 78.52/MWh) a huge improvement on the failure to award any capacity from AR5. The UK government has launched this year's Contracts for Difference (CfD) Allocation Round 7 (AR7), which includes specific support measures like the Clean Industry Bonus, which encourages developers to invest in UK-based suppliers. The results are expected to be announced between late 2025 and early 2026.

Economic outcome

The UK's offshore wind sector continues to translate policy ambition into measurable economic value. Works closely with industrial associations and think tanks to monitor and assess progress toward achieving 60% local content by 2030. According to OEUK's "Supply Chain Report 2025," the industry's interim targets are "50% UK content" and "30% local technology delivery" (i.e., technological localisation). A 2021 study shows that local UK content had already reached about 48% of total expenditure. The UK local supply chain can contribute largely to DEVEX, other installations (apart from turbine, foundation, and cable), and OPEX with 73%, 74%, and 81%, respectively. On the other hand, turbine, foundation, cable, and cable laying are currently composed of less than 10% local content (Table 4.14).

[24] "RenewableUK EnergyPulse Report -June 2025." RenewableUK, June 2025, www.renewableuk.com/energypulse/reports/global-offshore-wind-pipeline-june-2025/. Accessed 13 Oct. 2025.

Table 4.14

Local Content Contributions in the UK Offshore Wind Supply Chain

Allocation Phase	Item	% cost	UK content	Scotland content
DEVEX	Development & project management	2%	80%	38%
CAPEX	CAPEX - total	46%	12%	12%
	Turbine	19%	7%	7%
	Substations	3%	19%	19%
	Foundations	9%	7%	7%
	Cable	2%	7%	7%
	Turbine and foundation installation	6%	6%	6%
	Cable installation	4%	8%	8%
	Other installation	3%	75%	75%
OPEX	Operation and maintenance	49%	81%	81%
DECEX	Decommissioning	2%	30%	30%
	Total	**100%**	**48%**	**25%**

Other than local content, other economic benefits are shown in Table 4.15.

Table 4.15

Key Economic Benefits in the UK Offshore Wind Sector

Category	Key Actions / Focus
Economic growth and production	• Industry estimates suggest £2–3 billion (≈ USD 2.54–3.81 billion) of GVA per GW installed and annual exports of > £2 billion (≈ USD 2.54 billion). • The Crown Estate (TCE) outlined up to £400 million (≈ USD 508 million) for the supply chain included ~£350 million (≈ USD 445 million) for ports and fabrication capacity plus £50 million (≈ USD 64 million) via an accelerator for early-stage enabling works.
Energy security	• The objective is to reduce exposure to global gas price volatility, stabilise wholesale prices, and enhance energy independence through a secure domestic supply mix. • Independent analysis by Carbon Brief confirms the ongoing shift of generation away from fossil fuels. • Offshore wind generated 48.5 TWh in 2024, delivered alongside record wind-plus-solar shares and declining fossil generation, demonstrating sector reliability even under average wind conditions.
Job opportunities	• Offshore employment demand is projected to reach ~74,000 by 2030 under a 39 GW baseline, and up to ~95,000 under a 52 GW scenario[25], covering all aspects of wind farm development, i.e., project management, construction, O&M. • In the short, medium, and long term, the sector supports over 200,000 skilled jobs throughout the UK.
Industry development	• The CfD Clean Industry Bonus (CIB) in AR7 provides additional revenue support for projects investing in UK manufacturing, with a budget of £20.1 million (≈ USD 25.5 million) per GW and a total allocation exceeding £544 million (≈ USD 691 million).

Additionally, the UK government has invested significant resources in innovation to develop and invest in low-carbon technologies. Innovation in the offshore wind industry plays a key role in the UK's Clean Growth industrial strategy. The creation of the UK Offshore Renewable Energy (ORE) Catapult in 2013 brought together leading UK research and testing facilities and expertise in offshore renewable energy to support the development of world-leading skills, knowledge and expertise in the offshore sector, having leveraged around £500 million (≈ USD 635 million) of collaborative investment in innovative offshore renewable energy technologies to date.

[25] "17 June 2025 - RenewableUK and Offshore Wind Industry Council Joint Report." RenewableUK, 17 June 2025, www.renewableuk.com/news-and-resources/publications/wind-industry-skills-intelligence-report-2025/. Accessed 14 Oct. 2025.

This Deal builds on the established Offshore Wind Innovation Hub, a collaboration between Innovate UK and the ORE Catapult which has jointly agreed on innovation priorities around 4 key areas, which may bring significant economic benefit:

- Wind turbines (including next-generation large-rotor designs)
- Sub-structures (fixed bottom and floating foundation)
- Electricity infrastructure
- Operation and Maintenance (O&M) automation and data systems

In 2025, the UK government announced a new £1 billion (≈ USD 1.27 billion) Supply Chain Investment Package to strengthen the domestic manufacturing and innovation base for offshore wind, including support for R&D and technology demonstration projects.[26] Meanwhile, Innovate UK launched a UK–US Offshore Wind Collaborative R&D Funding Programme to foster joint research between British and American partners, with grants of up to £2 million (≈ USD 2.54 million) for early-stage innovation.[27]

The innovation of floating offshore wind foundations is regarded as an important factor in maintaining the early success of the UK's offshore wind development. The floating foundation can be installed in deeper water to enlarge the feasible waters for offshore wind, and the R&D is expected to provide great opportunities for knowledge transfer and technology export, positioning the UK as a global leader in floating wind.

Innovation and R&D objectives are embedded in the Supply Chain Plan application and review, encouraging market-driven investment into innovative offshore wind technologies and improving the UK's offshore wind industry capacity and competitiveness.

Socio-economic benefit sharing

Social Benefit Mechanisms and Outcome

In England and other parts of the UK, all social benefit measures are currently voluntary or contractual/lease-based in nature, rather than being mandated by law. However, two quasi-mandatory mechanisms indirectly deliver benefit-sharing effects: the Supply Chain Plan (SCP) and the Development Consent Order (DCO).

- Supply Chain Plan (SCP): To participate in the Contracts for Difference (CfD) auction, offshore wind developers must pass an SCP assessment. This plan must demonstrate how the project will promote local manufacturing and supply chain participation, provide training and technology transfer, and deliver wider social and economic.
- Development Consent Order (DCO): The onshore components of offshore wind projects (such as cable landfalls and substations) require consent under the Planning Act 2008 through a DCO process. During this review, local authorities may request developers to provide measures such as local road improvements, job training centers, community funds, and landscape or environmental compensation.

[26] ReNews. "LSP at GOW 2025: UK Government Commits £1bn to Offshore Wind Supply Chain." LSPRenewables, 19 June 2025, www.lsprenewables.com/news/lsp-at-gow-2025-uk-government-commits-1bn-to-offshore-wind-supply-chain/. Accessed 14 Oct. 2025.

[27] "UK-US Offshore Wind Collaborative R&D Funding." Innovation Hub, https://ukinnovationhub.ukri.org/offerings/uk-us-offshore-wind-collaborative-funding. Accessed 14 Oct. 2025.

Regarding Shared Ownership, it is not currently common practice for such opportunities to be offered to communities in England. However, the Scottish and Welsh Governments actively encourage developers to voluntarily provide shared ownership options as a standard component of renewable energy projects. The Infrastructure Act 2015 empowers the Secretary of State to establish regulations granting local communities the right to purchase a stake in renewable electricity generating facilities located in their area (known as the community electricity right). Moreover, the UK government has set an ambitious target of achieving up to 8 GW of local and community-owned energy by 2030.

Although there is no legal requirement for benefit sharing, three main types of voluntary mechanisms are most commonly implemented in practice:

- **Community Benefit Funds (CBFs):** These are voluntary financial arrangements established between developers and local communities. CBFs provide long-term, reliable, and flexible funding that communities can use to directly improve their local area, environment, society, and economy.
- **Local Electricity Discount Schemes (LEDS):** LEDS allow residents and local businesses situated near a wind farm to receive annual discounts on their electricity bills, creating a clear and tangible energy link between the project and the community.
- **Shared Ownership Models:** Initially developed under cooperative schemes, these models allowed local residents to purchase stakes in new renewable projects and receive annual returns linked to the plant's performance. Priority was given to residents living closest to the project to maximise local economic benefits. More recently, this model has evolved into Community Benefit Societies (BenComs), where returns must be reinvested into the local community rather than distributed to individuals.

Case A: Crossdykes Wind Farm

The Crossdykes Wind Farm is located near Torthorwald, Dumfries and Galloway, Scotland, approximately 10 km northeast of Dumfries. The project comprises 10 turbines with a total installed capacity of 46 MW, generating sufficient renewable electricity to power approximately 45,000 homes annually and offset around 70,000 tons of CO_2 emissions each year. It represents one of the UK's most advanced examples of social benefit sharing in renewable energy projects, integrating 5% shared ownership with a £7,000 (≈ USD 8,890) per MW per year community benefit fund.

- **Community Engagement and Governance**
  From the outset, the developer adopted a participatory planning process, engaging local councils and community groups in designing the benefit structure in 2014 before the project started. To ensure transparent governance and local decision-making, the Dumfriesshire East Community Benefit Group (DECBG) was formed to represent nearby areas including Langholm, Eskdalemuir, and Lockerbie. Subsequently, a charitable body: Crossdykes Community Benefits Ltd (CCBL), which was established to manage and allocate the annual fund. These institutional arrangements have helped secure accountability and long-term local control over benefit distribution.

[28] "Crossdykes Wind Farm." Local Energy Scotland, https://localenergy.scot/casestudy/crossdykes-wind-farm/. Accessed 16 Oct. 2025.

- **Benefit Fund Design**
  Recognising the rural setting and limited financial capacity of the communities, the original proposal for a 10% ownership stake was revised to 5%, complemented by an increased annual benefit fund. This adjustment provided a more financially sustainable model, reducing risk exposure while ensuring that communities receive substantial, predictable income. The resulting £322,000 (≈ USD 409,000) in annual community funding is projected to exceed £8 million (≈ USD 10.16 million) over the project's operational lifetime, supporting projects in education, local enterprise, and social infrastructure.[29]

- **Capacity Building and Advisory Support**
  The Crossdykes case illustrates the significance of capacity building in fostering genuine community participation. Through the Scottish Government's Community and Renewable Energy Scheme (CARES) programme and Local Energy Scotland, communities received grants and advisory support for feasibility studies, legal services, and financial assessment. This ensured that local representatives were fully informed and capable of negotiating complex ownership and governance arrangements.

- **Long-term Impact**
  When the wind farm was acquired by a new owner in 2022, the community's 5% equity stake generated a seven-figure capital return, reinvested into local development initiatives. The Crossdykes model illustrates how combining shared ownership, structured benefit funds, and transparent governance can transform renewable energy projects into vehicles for long-term regional resilience and inclusive growth.

Case B: Dogger Bank Wind Farm

The Dogger Bank Wind Farm, situated over 130 km off the Yorkshire coast in the North Sea, represents the world's largest offshore wind project and a landmark example of community benefit sharing at a national scale. Jointly developed by SSE Renewables, Equinor, and Vårgrønn, the project comprises three phases—Dogger Bank A, B, and C—with a combined installed capacity of 3.6 GW in total, capable of supplying renewable electricity to approximately six million homes in the UK. Construction began in 2020, and the facility is partially operational, with full operations expected by 2026.

- **Community Engagement and Governance**
  Dogger Bank's community engagement framework was developed in line with the consultation requirements under the Planning Act 2008. From the earliest planning stages, developers collaborated with local authorities, schools, and community organisations across East Riding of Yorkshire, South Tyneside, and Redcar & Cleveland, ensuring that local priorities informed the design of social investment measures. A structured governance model, involving representatives from SSE Renewables, Equinor, and independent regional bodies, oversees the allocation of community funds and scholarships, ensuring transparency and accountability.

[29] "Community Involvement First in Crossdykes Wind Farm in Dumfries and Galloway." South of Scotland Enterprise, 7 Oct. 2021, www.southofscotlandenterprise.com/case-studies/crossdykes. Accessed 16 Oct. 2025.

- **Benefit Fund Design**
  The project established a long-term Community Investment Fund, committing approximately £25 million (≈ USD 31.75 million) over the project's 35-year operational life. The fund primarily targets Science, Technology, Engineering, and Mathematics (STEM) education, scholarship programmes, and local community grants to promote skills development and social wellbeing. Each year, more than 75 community grants are distributed to support local initiatives such as sports facilities, digital inclusion programmes, and environmental improvements. This approach ensures a flexible and locally responsive funding mechanism, directly linking offshore energy generation with tangible community outcomes.

- **Capacity Building and Educational Investment**
  One of Dogger Bank's most significant social contributions lies in capacity building and youth engagement. Through its STEM and Scholarship Programmes, the project has reached over 36,000 students across 200 schools, provided 62 university scholarships, and delivered career workshops to more than 12,000 learners. These programmes aim to build a future-ready workforce aligned with the UK's net-zero and offshore wind ambitions, bridging the gap between education and emerging green industry opportunities.

- **Long-term Impact and Voluntary Commitment**
  Although the UK has no statutory requirement for offshore wind community benefits, Dogger Bank demonstrates how voluntary and contractual commitments can achieve meaningful and measurable outcomes. The project's investment structure has established a model of cooperative governance and sustained local impact. Beyond direct funding, the initiative contributes to regional resilience by supporting employment, education, and social cohesion across coastal communities.

  In summary, Dogger Bank illustrates how large-scale offshore wind projects can translate voluntary benefit frameworks into systematic, long-term community development. This project provides a scalable template for integrating social value into the UK's renewable energy transition.

Comparison of international case study

To summarise the international case study as a reference for the Philippines' benefit-sharing, the overview table is shown below. Each market has its own context and progress for offshore wind development. There are common goals and policies set up to stimulate benefit sharing for general society. Community-based agreements and funds are common examples of obtaining social consent under the co-thriving principle. Local content strategy is expected to bring economic and social benefits from industry development and job creation.

Table 4.16

International case study for OFW development and benefit-sharing

Country	Policy & Market	Benefit-sharing approach	Outcome
Japan	• Targets: 10 GW by 2030 and 30–45 GW by 2040 • Three-phase zoning: Potential, Promising, Promotion Zones. • The local council must approve each promotion zone. • Auction selection based on Project Content and Price Bidding.	• Community Benefit Agreements (CBAs): Conduct a council to ensure developers must undertake stakeholder consent throughout the project lifecycle, showing strong local empowerment. • Bidding scores favor developers offering stronger local contributions such as employment, fisheries coordination, tourism, and environmental protection.	• 253.4 MW in operation (2024), including 5 MW floating wind farms. • As of 2024, a total of 5.1 GW is being developed; some projects may fail to develop due to the cost. • All developers commit to "No disruption to fishing" and establish funds. • Local benefits typically emerge early in the project lifecycle, often before construction begins.
Taiwan	• Target: 18.4 GW by 2035 and 40 – 55 GW by 2050 • Started from Demonstration and Potential Zone, followed by Zonal Development (Round 3) • Auction mechanism with price bidding and technical capability and local content review	• Revenue sharing: Part of the project revenue is allocated to a fund that supports local governments and residents. • Local content: Auction requested at least 60% of core components (e.g., foundations, nacelles) LCRs, with the remaining 40% as bonus points for auction scoring. • Policy requests Assistant Funds for Fishery and local governments under the agreements. • Payments before and during construction for the Co-existence and Prosperity Fee are needed.	• 2,987MW in operation (2024), it is the second largest market in Asia • Successful supply chain development for about USD 3 billion value output • Local content requirement brings strong development for specific sectors and jobs, creating about 18,000 jobs (2016–2023) and industry capability. • Establish a stable benefit-sharing framework for later developers to follow.

Table 4.16 continued

International case study for OFW development and benefit-sharing

Country	Policy & Market	Benefit-sharing approach	Outcome
China	• Target: The 15th Five-Year Plan period (2026–2030) declaration envisions 1.3 TW of cumulative wind capacity by 2030, 2.0 TW by 2035, and 5.0 TW by 2060. • The largest OFW market in the world • Top-down governance framework, reflecting the centralised policy and planning structure • Key provincial governments set up Five Five-Year Plans and annual "focus projects." • Developers can apply the sea area development right from the Provincial governments.	• Infrastructure Co-Investment: co-development for industries, e.g., fishing, steel, and ocean engineering. • Local content: Early local content policies helped build the industry foundation, enabling China-made turbines and components to become competitive in the global market. • Major developers, many of which are state-owned or government-backed, closely follow national policies and actively contribute to rural poverty alleviation efforts.	• 41GW in operation (Feb 2025), as the largest and fastest growing market • Clean energy investment USD 940 billion in 2024. • Estimated 820,000 jobs in the offshore wind sector. • Promote mutual success between offshore wind development and fisheries by encouraging coordinated sea use and collaboration programmes that support both clean energy and sustainable livelihoods.
United Kingdom	• Target: 50 GW by 2030 and 125 GW by 2050. • The second largest OFW market • Auction-based to award CfD through technical review and price bidding. • Committed to achieving 60% of project lifetime local content by 2030. • Focus on projects larger than 300MW, which then they need to submit a Supply Chain Plan.	• Community Benefit Agreements (CBAs): Onshore components require consent, with local authorities potentially requesting local road upgrades, job training, community funds, and environmental or landscape measures. • Local content: Developers must demonstrate how the project supports local manufacturing, workforce training, technology transfer, and broader social and economic benefits in order to enter the auction.	• Industry estimates suggest USD 2.54 – 3.81 billion GVA per GW installed and more than USD 2.54 billion annual exports. • Encourages developers to invest in local supply chains, providing employment demand to reach 74,000 by 2030. • Leads to voluntary community benefit funds that support local infrastructure improvements, job training programmes, environmental mitigation, and other initiatives, enhancing community wellbeing and fostering social acceptance.

5.

Roles Definition and Policy Tools for Equitable Sharing

Proper policy design plays a crucial role in the outcomes of large-scale infrastructure development. According to the case study and other international experiences, effective policies can design mechanisms and tools that deliver better benefit sharing for the local community through more inclusive and equitable measures. Regarding the targeted 1.5 GW by 2030 and 3.5 GW by 2032 in the San Miguel Bay and Guimaras Strait areas, this section identifies and discusses essential perspectives, principles, and policy tools to help the Philippines realise the potential for benefit sharing in a thriving and equitable development and allocation.

Multi-level perspective for policy design

Both top-down and bottom-up lenses help identify suitable solutions and policy designs. This study takes a multi-level approach to analyse the potential policy design of benefit-sharing mechanisms at the local, regional, and national levels. The project's development and socio-economic growth result from the dynamic interplay among these three levels over time.

This section discusses the key functions and approaches for stakeholders at different levels. Following the discussion in Section 3.2, the different perspectives on the socio-economic impacts of offshore wind can be analysed at multiple levels to inform policy design and benefit sharing. It requires a comprehensive and consistent framework to ensure effective implementation for different benefit-sharing mechanisms and tools. The different layers of the authorities and stakeholders play various roles to realise the maximum benefits. Table 5.1 identifies the relevant topics/issues and aligns them with the benefit-sharing factors and measures that facilitate benefit-sharing.

Table 5.1

Multi-level analysis for benefit-sharing perspectives

	National	Regional	Local
Topics	• Economic development • Energy transition • Energy security • Infrastructure development • Industrial / supply chain development • OFW policy & regulation • Financial environment	• Infrastructure development • Industrial / supply chain development • Marine Spatial Planning (MSP) • Cross-LGUs cooperation • Regional environmental and social impact and mitigation • Coastal resources management	• Social consent • Local/community development • Alternative livelihoods • Training and skill cultivation • Inclusive and fair empowerment
Governance and implementation	• Establish national strategy and roadmap • Improve the transparency of the policy and development • Establish and improve the development policy and regulation • Improve financial environment	• Facilitate Marine Spatial Planning (MSP) • Grid Infrastructure Integration • Collective regional stakeholders' engagement • Integrated assessments • Regional benefit-sharing programme	• Surveys and assessments for relevant topics • Establish the committee or representative for engagement and benefit sharing management • Organise capacity building • Invest in training and skill cultivation • Ensure inclusive empowerment
Benefit sharing	• Economic growth • Low carbon development • Infrastructure development • Industrial development • Investment growth	• Infrastructure development • Regional development • Benefit sharing programmes • Environmental stewardship	• Infrastructure development • Public service improvement • Community benefit fund or pay-out • Capacity building for development • Training and skill cultivation • Job creation • Alternative livelihoods

National Level

Offshore wind is a newcomer to the Philippine infrastructure landscape, and like all ambitious undertakings, it demands more than local enthusiasm. The sector's success hinges on the central government's ability to marshal policy coherence, regulatory clarity, and long-term infrastructure planning. Grid and port development, streamlined permitting, and coordinated site selection will be important enablers as the sector scales.

To realise energy transition, central government must act as both architect and financier. National agencies possess the mandate, resources, and convening power to align climate ambition with economic strategy. What is needed is not just policy, but orchestration: a cross-agency mechanism that can translate high-level goals into executable frameworks and ensure that benefit sharing does not remain a rhetorical flourish. The three key areas for national-level contribution are elaborated below:

- **Central Mandate and National Strategy**
  The national government's central mission is to dictate the long-term development trajectory. This task inherently demands the establishment and underwriting of the requisite policy framework, administrative capacity, and capital. By clearly defining this high-level roadmap, the government sets the strategic direction for the entire nation. This includes the policy for offshore wind development and the relevant infrastructure (port and grid) and industrial development planning. Regarding the roadmap, the appropriate mandate, requests, and standards should be established to provide general guidance for developers, LGUs, and other stakeholders.
  Apart from policy and regulation, the national-level strategies are the primary responsibility of the central government. For high-level topics such as climate change, energy transition, and national economic development, comprehensive planning and resource allocation are necessary across different sectors. The strategies must then be underpinned by establishing effective cross-agency communication and coordination mechanisms to facilitate streamlined policy- & regulation-making, particularly in relation to development and benefit-sharing frameworks.

- **Securing Resources and Governance**
  Achieving this long-term vision requires more than just a strategy; it necessitates securing the necessary resources and oversight. The government must rigorously identify the key policy instruments and managerial structures required to foster growth and mitigate systemic risks. This ensures that the state's foundation is both robust and adaptable. The government needs to deliver governance of benefit sharing from policy setting to monitoring and evaluation (M&E) to ensure the execution aligns with national goals for socio-economic development and benefits.

- **Transparency for the policy and progress**
  The government's transparency in policy planning and development is key to eliminating public concerns about development and distributing benefits effectively. Sometimes, policies may foster excessive influence of small groups or elites over development, rather than contributing to a more equitable benefit sharing. Following the above points, the transparency of the national government's policy planning and latest progress are crucial for the benefit-sharing establishment.

- **Provide Guidance to Local Stakeholders**
  Local stakeholders typically lack the experience and knowledge to manage large-scale projects and require clear, reliable guidance to take action. To ensure coordinated and inclusive development, the national government must provide clear guidance and targeted financial support to regional and local authorities. This coordination is essential to avoid fragmented efforts and to empower local stakeholders to participate meaningfully in offshore wind development. Additionally, the various agencies must understand their respective authority and responsibilities throughout the lifespan of the offshore wind project. It provides the basis for regional organisations and LGUs to take action and develop benefit-sharing arrangements with the offshore wind industry, from compliance to competence perspectives. By aligning national objectives with local implementation, the government can help establish stable, forward-looking mechanisms that deliver long-term socio-economic benefits.

Overall, the national government's mission and responsibility are to ensure the high-level, long-term development target and roadmap, and to identify and establish or secure the necessary policies, resources, and management. It should provide essential guidance and resources to regional and local authorities and stakeholders, facilitating stable and forward-looking socio-economic development.

Regional and coastal area level

Regional authorities in the Philippines face a coordination challenge common to decentralised systems: multiple mandates across jurisdictions. Offshore wind development will require strengthened regional coordination, particularly where infrastructure and marine resources span administrative boundaries. A single LGU cannot plan grid upgrades or port expansions in isolation. What is needed is middle-tier planning—regional mechanisms that translate national energy ambitions into coherent, cross-jurisdictional strategies. Without it, the promise of offshore wind may founder in a sea of local constraints. We summarise the following objectives for the regional roles.

- **Integrated assessment and planning**
  Regional roles are guided by national policy and regulations. The CLUPs, CDPs, and LCCAPs need to reflect offshore wind zones, port infrastructure, and community benefit programmes. It requires the relevant local governments to establish collective organisations or committees to discuss strategies and planning, thereby facilitating cooperation among LGUs to achieve more effective and efficient resource use and benefit allocation. This also relies on survey and assessment to have the references needed for comprehensive planning. Cooperation among different levels of government to conduct assessments will be the foundation for realising benefit-sharing.

The development of infrastructure (grid and port) may bring both opportunities and challenges to the local communities. For example, the new grid infrastructure can improve energy resilience but change the land use; a new offshore wind port may exclude the original fishery use of the coastal land. Regional stakeholders need to jointly identify risks and opportunities and analyse the impacts and benefits of sustainable management. Additionally, regional benefit-sharing programmes and agreements are strong facilitators of local stakeholder empowerment.

- **Infrastructure development and management**

  In the Philippines, the most urgent regional task is ensuring physical infrastructure can support the new industry, given the massive scale of offshore components. However, infrastructure development brings opportunities and challenges and may lead to conflicting interests between the locals. It is essential to identify and include the key stakeholders affected by consultation, compensation, and benefit sharing. As mentioned, port and grid are the two key constraints for the OFW development in the study areas.

  - ◊ **Port Infrastructure Development:** Identifying, upgrading, and repurposing specific, strategically located regional ports to serve as staging, assembly, and operation & maintenance (O&M) bases for offshore wind projects. This includes the necessary expansion of quays and land-side marshalling areas.
  - ◊ **Grid improvement:** Planning and executing necessary transmission infrastructure upgrades (cables, substations, and connection points) within the regional load centers to reliably receive and distribute the high volumes of intermittent offshore wind.

- **Supply chain development**

  Local governments are ill-equipped to engineer industrial transformation independently. Supply chain development, particularly in capital-intensive sectors such as offshore wind, demands more than municipal ambition and requires scale, coordination, and national support. The economics of clustering—where proximity breeds efficiency—are essential. Strategic investment must be guided by regional strengths, whether in shipbuilding, steel fabrication, or skilled labor, and aligned with the practical needs of offshore wind deployment. China's state-led model offers a lesson in overcoming early-stage bottlenecks through coordinated industrial policy. Meanwhile, the UK's Tees Valley exemplifies how legacy infrastructure from the oil and gas sector can be repurposed to serve the green economy, transforming rust into resilience.

- **Marine spatial planning (MSP)**
  The country's archipelagic geography and fragmented administrative structure mean that marine spatial planning cannot be effectively managed by individual LGUs acting in isolation. Offshore wind projects span multiple jurisdictions, affect shared marine ecosystems, and require coordinated infrastructure upgrades as mentioned above. Marine resources, infrastructure, and economic spillovers span jurisdictions, making regional coordination essential. Regional planning enables economies of scale and strategic clustering. It allows authorities to align offshore wind zones with industrial hubs, workforce development programmes, and environmental safeguards. A regional approach also facilitates coherent stakeholder engagement, ensuring that the interests of fisheries, tourism, and conservation are integrated into development decisions. A regional planning framework would enable coherent zoning, infrastructure clustering, and stakeholder engagement, transforming fragmented ambitions into executable strategies.

Offshore wind projects require integrated planning across LGUs to ensure coherent strategies for grid upgrades, port development, and community benefit programmes. Without middle-tier governance mechanisms, national energy ambitions risk being undermined by local constraints. A regional approach enables economies of scale, strategic zoning, and inclusive engagement, which transforms fragmented ambitions into executable strategies, and forms an integrated power to enhance the empowerment of the local stakeholders.

Local level

Local governments play a pivotal role in translating national offshore wind ambitions into tangible socio-economic outcomes. While national authorities set the policy direction and high-level planning, it relies on municipalities and coastal barangays to make detailed systems and guidelines to formulate benefit-sharing mechanisms that are implemented, monitored, and adapted to community needs.

Local government units (LGUs) are responsible for integrating offshore wind into statutory planning instruments and for facilitating trust, transparency, and accountability. Furthermore, LGU supports community-specific impact mitigation, and tailored benefit programmes designed to secure the crucial "social license to operate" (SLTO). Their proximity to communities positions them to monitor project impacts, mediate conflicts, and ensure that OFW development delivers long-term, inclusive benefits. Through capacity building, training and skill cultivation, benefit-sharing agreements, etc. to compose the bottom-up forces to drive long-term socio-economic benefit growth.

- **Local permit and social consent**
  At the municipal and barangay levels, the focus is on efficient, transparent governance and active support throughout the project's lifespan. Local governments are expected to engage in active coordination with developers and national agencies (like the PNOC for port development) by providing technical support, regulatory assistance, and preliminary stakeholder engagement. LGUs need to establish OFW relevant local permitting procedures to ensure developers make adequate efforts and contributions to the local communities and key stakeholders, e.g., fishers and industrial associations.

The primary objective of local engagement is to secure SLTO, which entails moving beyond mere compliance to foster genuine community trust and acceptance. The permit and social consent can serve as the basis for empowering local governments and communities to participate in development and to voice their needs and considerations. Additionally, the engagement for SLTO can serve as the foundation for a Community Benefit Fund (CBF) or a Community Benefits Agreement (CBA), which brings long-term benefits to support local development and other improvements to livelihood, infrastructure, or public services.

- **Capacity building and empowerment**
  For local stakeholders, engaging with developers may be challenging due to limited experience and knowledge. It is crucial to have capacity building as part of the benefit-sharing to increase the capability of local empowerment. It sometimes happens that locals communicate or make decisions/agreements without complete information during development, making them more vulnerable. As a result, the policy design should facilitate developers or other third parties in delivering capacity building to the local community before any significant decision-making for the SLTO and CBA/CBF. On the other hand, the right to revision in different phases of a wind farm's lifespan can help stakeholders maximise the benefits of OFW development, thereby accelerating local development and acquiring the necessary capacity.

- **Training and skill cultivation**
  The current limitations in workforce readiness, particularly in technical knowledge and industry experience, require deliberate intervention. Developers and international suppliers can play a catalytic role by establishing local operations and offering structured training programmes, including on-the-job learning and vocational partnerships.

  Taiwan's experience offers a valuable precedent. Investments in offshore wind training centers have not only supported project delivery but also strengthened the domestic talent pipeline. Local governments have facilitated this process by organising job fairs and promoting university–industry collaboration, thereby encouraging youth participation and aligning education pathways with OFW sector needs.

- **Alternative livelihoods**
  The study areas host significant fishing populations, making OFW development a potential disruptor to traditional livelihoods. To mitigate adverse impacts, local governments must lead the design and implementation of fair, transparent compensation mechanisms for affected fishers and associations. These should be grounded in objective data and standardised criteria to ensure credibility and equity.

Beyond compensation, OFW presents opportunities for livelihood transformation. With targeted capacity-building and training programmes, members of the local community, particularly fishers, women, and youth, can transition into alternative roles linked to the OFW value chain. International case studies demonstrate that local supply chains and service sectors, including survey support, construction, operations and maintenance (O&M), can absorb and upskill local labor.

At the local level, OFW development must be approached not only as an energy infrastructure project but as a catalyst for inclusive coastal development. Strategic planning, stakeholder engagement, and investment in human capital are essential to ensure that communities are not merely compensated—but empowered. To realise these benefits, early engagement and inclusive planning are essential. Developers and LGUs must collaborate with local stakeholders to identify risks, co-design benefit-sharing mechanisms, and ensure that development is socially acceptable and economically inclusive. This includes mapping training pathways, establishing community funds, and creating employment pipelines aligned with project timelines.

Recommendation for benefit-sharing policy

The Philippines is emerging as a promising market for offshore wind development within Southeast Asia. The World Bank and the Philippine government have also published a roadmap for offshore wind development, demonstrating the significant potential for multiple benefits. The purpose of this study is to analyse the existing policy and market landscape and to provide recommendations for the Philippines to maximise socio-economic benefits fairly and inclusively, particularly for the OFW sector, as it is being developed.

Framework for offshore wind benefit-sharing

Following the study and analysis, we identified topics and issues relevant to the development of the Philippine OFW sector and compiled potential targets, strategies, principles, and guidelines for benefit-sharing. It is essential to establish a framework, policies, and related mechanisms, and to define the authorities, executors, and stakeholders who will follow this structure to formulate details tailored to the local context and market conditions, thereby developing a trusted and practical system and environment.

This study recommends a framework for the Philippine OFW development benefit-sharing with target, strategies, and principles (Table 5.2).

- **Targets** are common goals for benefit sharing in Philippine offshore wind development, which should be the socio-economic outcomes of various policies or mechanisms. These are not mere aspirations; they are the socio-economic dividends expected from a well-managed OFW sector.
- **Strategies** are high-level plans to achieve one or more long-term targets, providing rationales for the development direction or prioritisation of decision-making and actions. In a country where regulatory ambiguity often hinders progress, such strategic clarity is a vital reference for informed policymaking.
- **Principles** underpinning the framework are its most critical component.

Benefit sharing, in this context, is not a payout for disruption, it is a mechanism for empowerment. It demands early engagement, legal enforceability, and capacity building. It insists that communities are not just consulted but are also co-authors of their own development roadmap.

Table 5.2

Recommended frameworks for the Philippines' OFW benefit-sharing design

Topics and issues for offshore wind development in the Philippines	
Macro-level: • Climate change action • Energy transition • Economic and Local development	**Offshore wind development:** • Policy and regulation uncertainty and complexity • Site selection and impact assessment • Insufficient infrastructure: port and grid • Financial capability and risk • Supply chain development • Local development • Job creation • Impact on the local livelihoods
Target for benefit-sharing	
1. Policy and regulatory framework improvement 2. National economic development and strong spillover effects for the local economy 3. Sustainable local content and supply chain development 4. Green infrastructure and industry competitiveness 5. Direct community benefits, social license to operate, and empowerment 6. Local community development	
Strategy	**Principles**
1. Develop a national offshore wind benefit-sharing framework and roadmap 2. Inclusive stakeholder engagement and establish cooperation mechanisms 3. Institutionalise industrial and social development plans and roadmap 4. Integrate offshore wind with local development planning 5. Capacity building for authorities 6. Develop a monitoring and evaluation framework	1. Promote participation in renewable energy value chain 2. Maximise local development potential and opportunity 3. Ensure gender equality and social inclusion 4. Improve environmental sustainability

Mechanisms and approaches

Section 3.2 of this study presents a summary and analysis of benefit sharing. Following the benefit-sharing principles under the Philippine socio-economic status, it is recommended to focus on the following considerations and content in Table 5.3 to expand the benefits from OFW development in the study areas. The national topics are common issues for the Philippines that require the central government's attention. The local topics are relevant to the study areas in this report and require cooperation and engagement with local stakeholders to identify feasible or preferred measures. Regarding topics at different levels, the recommendations are to explore successful benefit-sharing practices.

Table 5.3

Guidelines and recommendations for benefit sharing at national and local levels

Guidelines for benefit-sharing	Topics / Issues		Recommendation
Context-Specific Design	National	• Policy design • Infrastructure capability barriers (grid and port) • Industry development • Training and skill cultivation	The permit and consent procedure needs to continue improving based on lessons learned from early project development and international cases. Infrastructure improvement can bring multiple benefits as it is quite insufficient for OFW development. The areas surrounding San Miguel Bay and the Guimaras Strait are relatively underdeveloped and rely heavily on fisheries income; alternative livelihoods from OFW development can bring both opportunities and challenges. Capacity building is crucial to realise benefit sharing regarding the coastal management programme in the study areas, which were not well-developed. Environmental issues must be carefully considered.
	Local	• Underdeveloped • High fishery population • Livelihood diversification • Biodiversity and ecosystem sensitivity • Climate change risk and impact • Capability and education level	
Early and Inclusive Engagement	National	• Policy design for inclusivity • Stakeholder consultation	It is crucial to allocate a longer period to identify key material issues and build stakeholder capacity to enhance efficiency and trust for subsequent discussions, thereby mitigating risks and impacts in advance. Early socio-economic assessments, stakeholder mapping, and analysis will facilitate the identification of benefits and inform project development. The authorities may require additional time to study and develop relevant policies and gather comments from stakeholders.
	Local	• Engagement and empowerment • Transparency • Trust building • Capacity building	
Legal and Governance Clarity	National	• Policy design • Governance (M&E)	The legal basis is vital for the sustainable implementation and governance of benefit sharing. The governance encompasses the allocation of rights and responsibilities among stakeholders, guidelines for execution, and evaluation and monitoring. The central and local governments need to continually improve policy design to ensure that potential benefit sharing does not conflict with existing regulations, and the requirements are clear and rational.
	Local	• Cooperate with LGUs and the community	
Capacity Building	National	• Governance • Industry development	Capacity building encompasses training and skill development for the local community, particularly for vulnerable groups. This can bring alternative livelihoods for the local communities. The supply chain will need to establish its capability to capitalise on business opportunities arising from OFW development. It will require investment and time for the government, local communities, and the supply chain to develop the relevant knowledge base that facilitates discussions and achieves the desired positive socio-economic outcomes.
	Local	• Local development • Alternative livelihoods	

In early stage, developers need to engage with stakeholders as early as possible, tailoring their approach to local circumstances, to understand relevant expectations and priorities, and to help build the necessary capacity. The benefit-sharing mechanism requires a robust legal and governance framework, which in turn relies on ongoing engagement with the relevant authorities. By combining these key considerations, we can expect OFW to make a significant contribution to Philippine socio-economic development.

There are some feasible benefit-sharing mechanisms (Table 5.4) following the analysis in Chapter 3 and Table 3.5 for the Philippines OFW development.

Table 5.4

Overview of benefit-sharing recommendations for the Philippines

Mechanism	Implementation	Stakeholders	Output
Community Benefit Agreements (CBAs) **Community Development Funds (CDF)**	LGUs to establish a policy to facilitate developers' CBAs/CDFs with relevant communities and to provide a grant for local development, training, and livelihood improvement programmes.	• LGUs • Developers • Community • Third party / NGOs	• Fund for local development • Support for job creation and training • Infrastructure or public service improvement
Local Employment & Training	Developers or OEMs can prioritise local hiring and training, which can be part of the CBA. Training centers can be established by the CBF. It can set additional prioritisation for hiring and training for young or vulnerable groups.	• Developers • Supply chain • Local young talents or vulnerable group	• Job creation and salary • Alternative livelihood
Supply Chain Localisation	Central government can set a National strategy and roadmap to facilitate local content development through the auction design and cooperation programme. A regional or local industrial cluster can follow the national development plan.	• Central government • LGUs • Developers • Supply chain	• Supply chain development • Economic growth and investment • Technology development • Job creation
Infrastructure Co-Investment	Central government can work with regional agencies or committees to have an infrastructure development & investment plan aligned with OFW roadmap. The developer can support infrastructure planning and construction, or charge developers for the grants.	• Central government • Regional Development Councils (RDCs) • LGUs • Developers	• Infrastructure (grid & port) • Local development • Energy security and resilience

1. Community Benefit Agreements and Community Development Funds

CBAs, increasingly common in mature markets, offer a promising solution for more trusted development and cooperation. These arrangements allow developers to engage with local governments and communities early in the permitting process, establishing long-term funding mechanisms that support local growth. In the Philippines, LGUs have the authority to initiate such agreements; however, few have the capacity or clarity to do so effectively.

Lessons from Japan and the United Kingdom suggest that CBAs can serve as more than just goodwill actions. When embedded in policy and backed by developer contributions, they become instruments of social consent—facilitating trust, mitigating opposition, and unlocking broader economic benefits. In Japan, consultative councils institutionalise community input and play as the condition for site zoning qualification; in the UK, voluntary funds and shared ownership schemes have become standard practice.

The Philippine governance landscape involves multiple legal instruments to support benefit-sharing across various agencies. Coordinating these overlapping mandates remains a challenge, and the absence of a central coordinating body can slow implementation. The policy basis for funding exists, though access pathways—particularly for small LGUs and fisherfolk groups—would benefit from streamlining. It is recommended that the Philippines move beyond principled and recommended arrangements and form clear guidelines for benefit-sharing funds. A coherent national framework, coupled with empowered local institutions, could turn CBAs from optional extras into essential infrastructure for equitable development. Figure 5.2 shows the change from the existing practice of coastal resource management to the recommended OFW CDF.

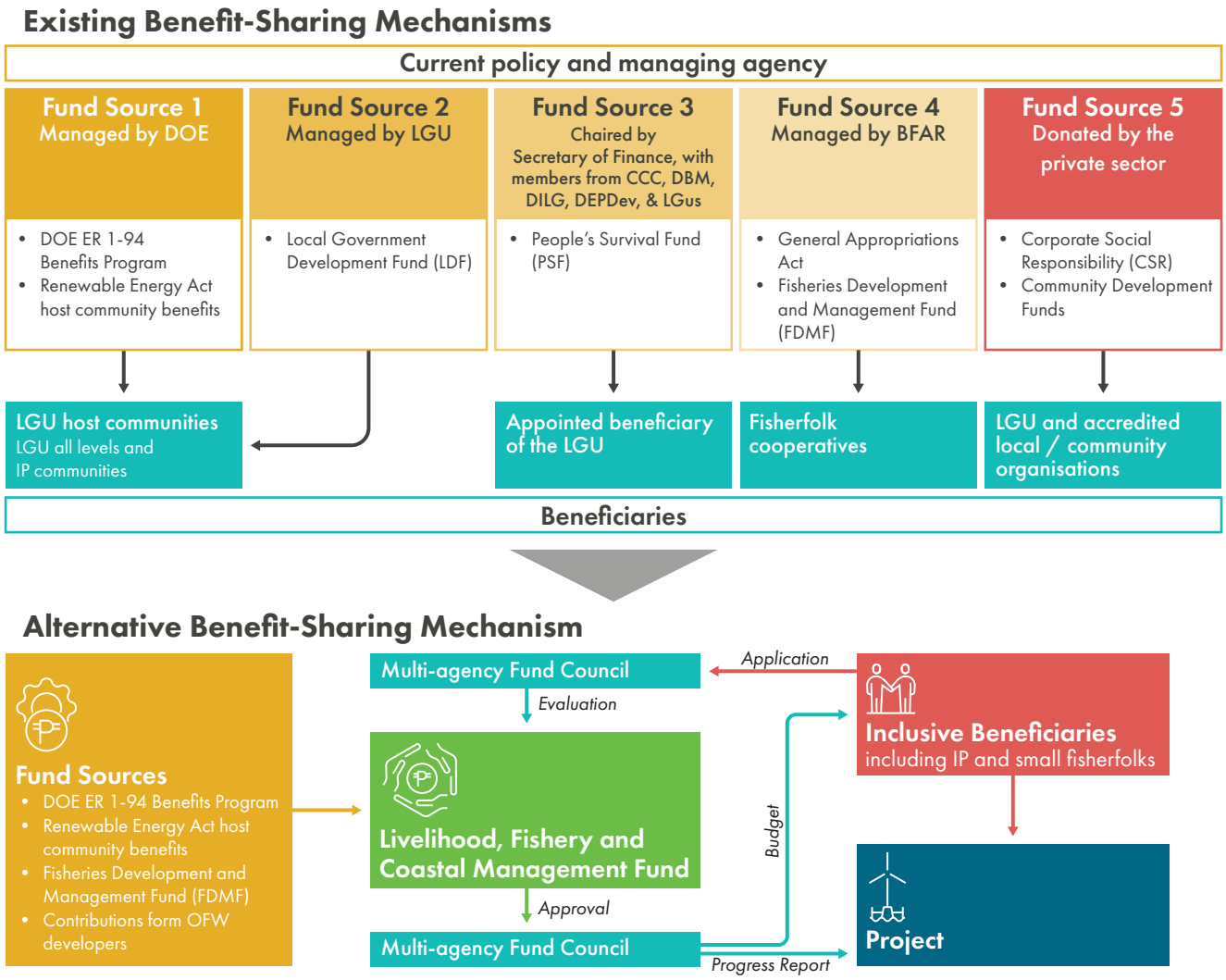


Figure 5.2

Philippines' CBF mechanism example

Several recommendations outline potential benefit-sharing options and the key elements that should be incorporated into future agreements. These considerations are typically raised by LGUs and local communities as part of their engagement agenda with project developers. The topics and negotiated objectives should align with established strategies and guiding principles, ensuring that benefit-sharing arrangements support long-term, sustainable outcomes and generate meaningful positive impacts for communities and the Philippines as a whole.

a. **Local hiring and training:** Commitments for a percentage of construction and permanent jobs to go to local residents, and the relevant training should be provided, aligning with the project development progress. Establishing and operating a training center can be an early investment in long-term cooperation.

b. **Compensation and investment for fishery:** Requiring the payment of living wages for the impact from construction. The programme to support fishery co-development with the wind farm operation will build up the long-term cooperation between developers and local fishers for benefit sharing.

c. **Local power supply:** Generation from the project with FiT can be prioritised (by the authority requirement) for the regional/local energy supply, supporting the green economic development for the study areas.

d. **Infrastructure, amenities, or service:** Funding for new or improved roads, grids, ports, substations, which can have a direct positive impact on project development and enhance the regional/local energy and climate resilience. The funding may come from CDFs or additional commitments and investments from developers. In addition, improving living standards through parks, schools, libraries, childcare, and nursery services, accompanied by relevant services, can expand social benefits for the region.

e. **Environmental Commitments:** Implement best practices for environmental impacts mitigation and ecosystem and biodiversity conservation. Environmental and social impact assessment and governance should encourage additional commitment from the developers. The programme should include local engagement.

2. **Local Employment & Training**

Job creation is the common socio-economic benefit from OFW development across all case study markets. However, those policies and mechanisms led to very different outcomes of the local employment effect. Usually, developers are encouraged to prioritise local hiring for construction, O&M activities. The strategy includes establishing local skills development and capacity-building programmes tailored to the offshore wind industry (e.g., vessel crew training, basic industrial skills) to create long-term, non-temporary job opportunities for residents.

The international case study gives the vital successful factors for job creation and training:

1. **Establishment of training centers:** marine engineering, sea survival and boat transfer need training; also, the turbine-related works need certification according to international standards. The training center is essential for cultivating the skills required to work agilely.

2. **Prioritisation of local hiring:** some of the developers commit local hiring in their agreement with the local community or government. This prioritisation can be institutionalised through a formal document and a binding agreement.

3. **Cooperation with university or vocational schools:** the cooperation between developers, OEMs and schools can transfer international experience effectively. This leads to alternative livelihoods for local youth.

4. **Targeted Training and Certification:** Implement comprehensive capacity-building initiatives and training programmes to upskill Filipino workers to meet specialised wind industry training and international certification standards.

In the Philippines, LGUs can work with developers and OEMs to facilitate the establishment of training centres and programmes with the schools. Also, it should be high-impact, low-effort actions to include prioritisation of local hiring and training investment in the CBA. LGUs can set up the training center earlier and encourage the developer to invest or support its operation to ensure sustainable operation.

3. Supply Chain Localisation

The development of local content in the Philippines' offshore wind industry is vital for maximising economic benefits. However, the Taiwan case highlights the challenges coming from rigid Local Content Requirements (LCRs). A feasible LCR that delivers meaningful benefits to local communities should be grounded in a thorough assessment of domestic supply chain capacity and supported by a well-structured local content strategy and roadmap to avoid unintended consequences. The economic impact analysis in Section 2 estimates outcomes under low- and medium-content scenarios, which already demonstrate significant job creation and economic spillover effects. However, overly ambitious LCRs that create development bottlenecks could ultimately limit the realisation of these benefits.

To enhance and expand the business opportunities for supply chain localisation, the following principles must be carefully considered:

1. **Practical national strategy and roadmap:** the local supply chain is unlikely to develop in a short time for OFW industries. The government can formulate step-by-step strategy to identify which segments of domestic industrial base with a relative advantage for participation and encourage the local supply chain to invest and develop with international partners.

2. **Infrastructure and manufacturing zoning:** Prioritise and align plans for key ports among the Department of Energy (DOE), Philippine Ports Authority (PPA), and developers to upgrade and develop specialised ports including marshalling, manufacturing, and O&M ports that can handle the large, heavy components of OFW turbines. From the China case, the manufacturing hub in the qualified port zone is vital for cost and construction management and bring the economies of scale.

3. **Industry Collaboration:** Foster partnerships between local academic/vocational institutions. LCR compliance can help developers realise projects and create opportunities for the local supply chain, while enabling international OFW developers to transfer knowledge and technology. Especially in the early stages of OFW development, the government should encourage collaboration rather than competition in the market; the local supply chain may discover its strength through cooperation.

4. **Flexibility** is still necessary for LCRs, as the UK's LCR policy and implementation show that the relatively flexible requirement for LCR compliance can help developers realise projects and bring the proper opportunities for the local supply chain. Flexibility represents an open and adjustable requirement for the project to propose various solutions to facilitate the local supply chain development, which include investment, joint-venture, knowledge-sharing, priority order, etc.

4. Infrastructure Co-Investment

Infrastructure development typically requires substantial capital investment, which can be challenging for the Philippine government and utilities. OFW development offers the opportunity to co-invest in the wind farm (government or community owns the shares) and its necessary infrastructure throughout the project development. In Taiwan, some developers have also invested in the O&M port to support its wind farm operation.

The Philippines faces significant constraints in its power grid and ports to support OFW development, requiring active collaboration between the central and local governments to integrate this into relevant long-term planning. The government needs to follow the OFW project development and align it with other energy transition plans to establish a long-term grid and port development strategy and roadmap that supports the renewable target. The developers are likely to be more efficient in making investment decisions as part of the wind farm development plans.

The relevant authorities can open the investment for project-related infrastructure, and the existing utility or grid operator can purchase back the infrastructure share's ownership through service fees. This will involve identifying the infrastructure gap and funding gap that can be co-invested with developers through the project's CBA or other agreements and supporting funds.

This study outlines a strategic framework for benefit sharing in OFW development, tailored to both national and local contexts in the Philippines. It recommends a context-specific design that addresses infrastructure limitations, policy gaps, and the need for alternative livelihoods in underdeveloped coastal areas. Early and inclusive engagement is emphasised to build trust, ensure transparency, and strengthen stakeholder capacity. The section also calls for clearer legal and governance structures to support the equitable distribution of benefits. Overall, it advocates for a coordinated approach that integrates offshore wind into broader development planning, promotes local participation in the renewable energy value chain, and enhances social inclusion and environmental sustainability.

Framework and guidelines for realisation of benefit-sharing

To realise benefit sharing in the Philippines, this study collates the study output and comments from key stakeholders, it is essential to have a clear framework and guidelines for the governments at different levels and the developers for reference. We further develop the framework in Figure 5.3 showing key factors for realising benefit sharing, relevant stakeholders, and permits and consent. From the establishment of trust with the locals, early cooperation and investment, to generating the benefit-sharing from the project in the construction and O&M stages.

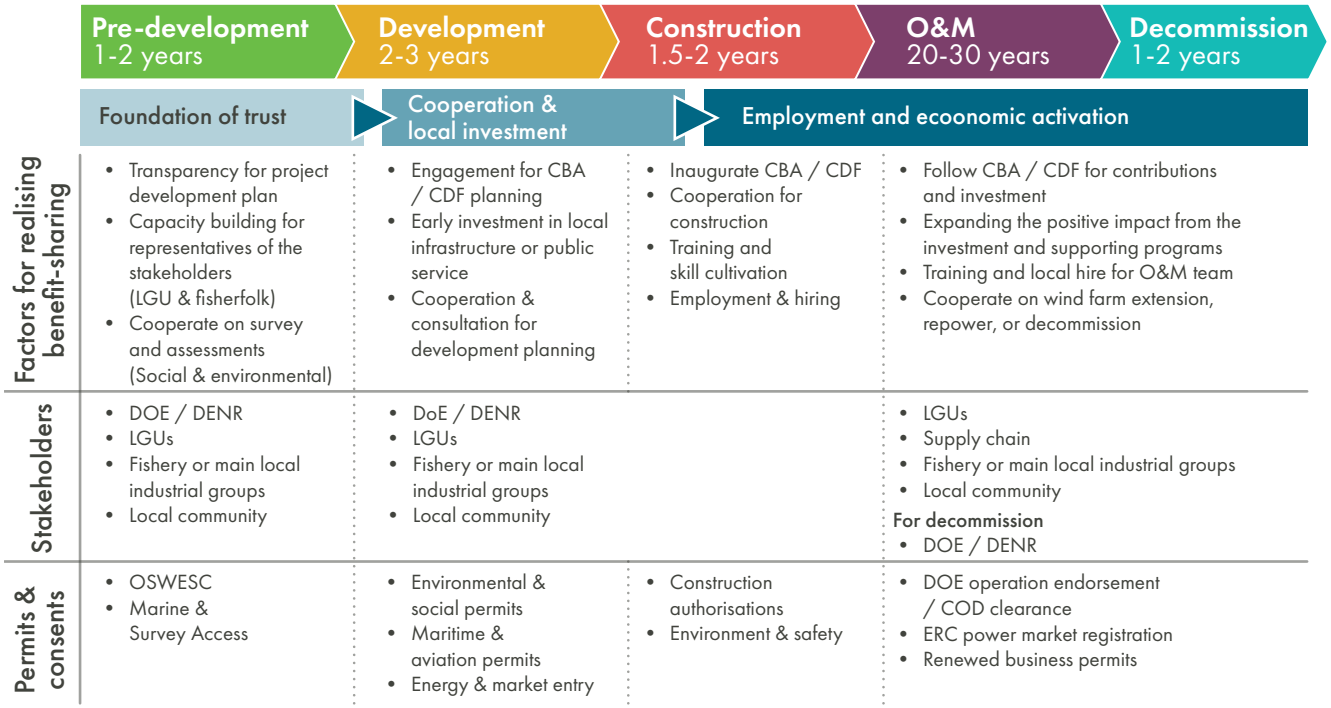


Figure 5.3

Framework for realisation of benefit sharing at different development stages

Furthermore, we identify key areas for engagement and development works (Table 5.5) for the government's policy planning or developers' engagement work planning. It can be the guidelines for the developer to refer to create the benefit-sharing for the local and the government should consider the factors and recommendations to establish a supportive regulatory environment to encourage the realisation of benefit sharing from the OFW development.

Table 5.5

Key Areas for Engagement and Development work for benefit-sharing

Areas for Engagement	Key Measures for Success and Recommended Activities
 Information Campaigns (IEC)	**Full transparency from the national to the local government and the developer; establishment of trusted authorities and robust grievance mechanisms.** Regular multi-stakeholder discussions and consultations on the following topics must be conducted throughout the project lifecycle: • Project developers and owners • Conceptual designs • Project area • Survey plans and results • Permitting and consenting status • Benefit-sharing mechanisms and allocations • Construction, mitigation, and investment plans • O&M and decommissioning plans • Job and training opportunities and plans
 Capacity Building	**Early investment, and regular review of outcomes and performance.** Local stakeholders must be empowered through the following capacity building activities: • Introduction to OFW and OFW development • Gaps and needs identification and analysis workshops • Impacts and mitigation identification and analysis workshops • Benefit-sharing and compensation mechanisms workshops • Leadership and administration workshops for community councils, organizations, or associations • Job training programs
 Agreement, Founding, and Investment	**Investment and development relevant to the local context, and a decision-making process that is inclusive for all stakeholders.** Investment in the communities must be grounded on local contexts through: • Identification, mapping, and early engagement of key stakeholders • Inclusive, transparent, and locally relevant pilot programmes • Regular and transparent monitoring, reporting, and reviewing of the progress of agreements and benefit-sharing commitments • Establishment of community-representative organizations and associations
 Workforce and Training	**Realization of the local workforce potential through balanced hiring, training, and alternative livelihood programs.** **Assess the local workforce potential and maximize the employment and livelihood dividends received by host communities and surrounding areas** The local workforce potential must be assessed to ensure that the employment dividends of the projects redound to the benefit of the host communities and neighboring areas: • Local workforce gap assessment and analysis • Specialized training programs
 Inclusive Development	**Full-scope, multi-sectoral stakeholder engagement with nobody left behind** All stakeholders, especially vulnerable groups like fisherfolks, women, and youth, must be identified, included, and heard in every area of engagement through: • Identification of stakeholder groups • Assessing and monitoring the impact of engagement and project activities on each stakeholder group • Continuous and regular engagement with all stakeholder groups • Establishment of grievance mechanisms, ensuring access to all stakeholder groups

As noted in this report, some existing policies have already been defined and provide principles to facilitate the sharing of renewable energy benefits. However, it is crucial to bridge the gap from the fragmented policy framework and give a consolidated direction for policymakers and developers. Along with the recommendation of this Section, Figure 5.4 shows the core missions that facilitate benefit sharing at each OFW stage for the national government, LGUs, and developers. Each key actor in OFW development should take responsibility for ensuring sustainable benefit sharing. Cooperation between national and LGUs is necessary, particularly for assessing and identifying suitable and equitable roadmaps for development and investment. Developers need to cooperate and consult the local for the project development design, and start the engagement and investment (training and infrastructure) at an early stage.

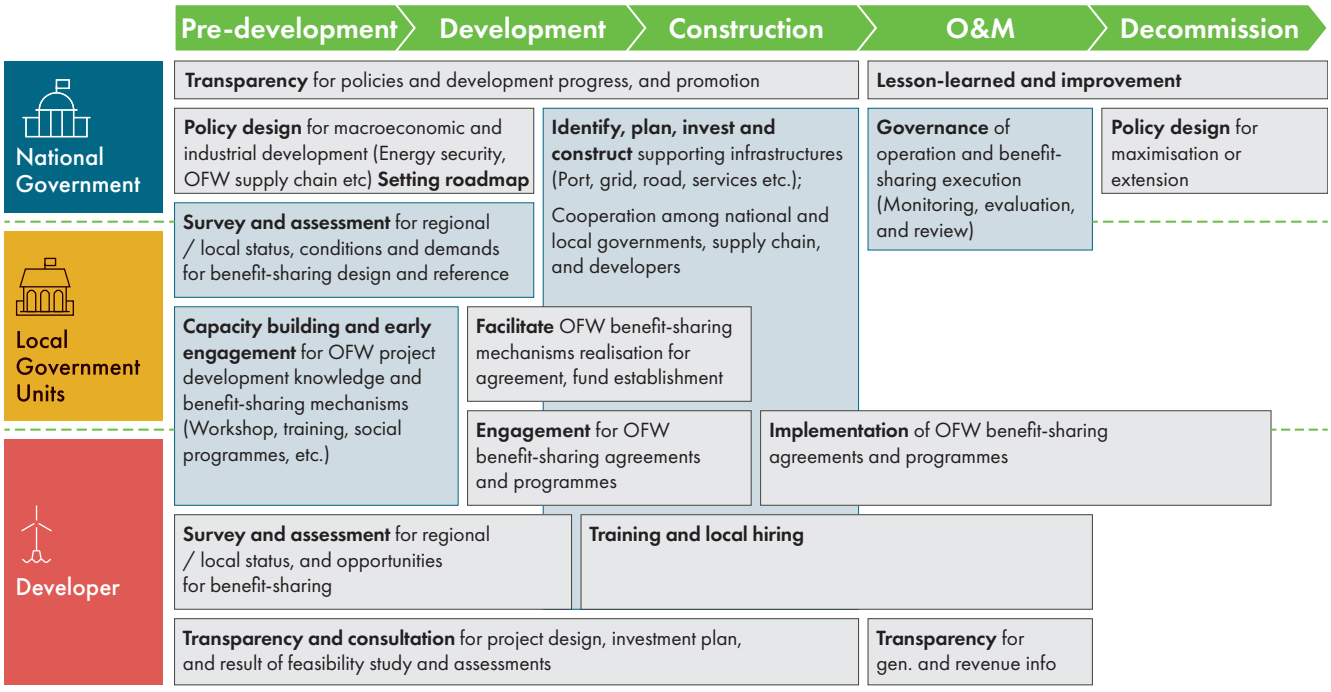


Figure 5.4

Different engagement and works to realise benefit-sharing

Recommendations for a Gender Inclusive and Just Transition

Following the mentioned mechanisms and tools for facilitating benefit-sharing, there are other social benefits that may be invisible from public perception or quantitative outputs. In the context of climate change and the energy transition, Just Transition and Gender Inclusion are vital priorities for offshore wind development policymaking. There are four common justices for climate change just transition discussions: Distributive Justice, Procedural Justice, Recognitional Justice, and Restorative Justice. The first two concepts of justice are more relevant for renewable energy development benefit sharing:

1. **Just Distribution of Benefits:**

Renewable energy projects must adhere to principles that ensure the fair distribution of economic benefits, such as the redistribution of income related to projects, while minimising and addressing adverse impacts affecting communities and biodiversity i.e., distributive justice.

Distributive justice requires a granular analysis of who wins and who loses during the lifecycle of an offshore wind project. This consideration encourages the mentioned benefit-sharing mechanism to have a lifecycle perspective to identify the economic, environmental, and social losses and benefits, and establish and fair allocation governance.

2. **Inclusive and Transparent Processes:**

Procedural Justice refers to the fairness, transparency, and inclusivity of the decision-making process. Local communities must have meaningful opportunities to shape projects that impact them. This includes providing clear and accessible information, fostering open dialogue, and ensuring decisions reflect community priorities.

Procedural justice is not just about system and decision-making; it is about the quality and influence of stakeholder engagement. The key factors to realise procedural justice include:

- Inclusivity and representation
- Early-stage engagement
- Accessibility for the project information
- Awareness and mitigation for power asymmetry

Distributive and Procedural justice are crucial to the design and implementation of OFW benefit-sharing. Following the discussion and analysis of this study, establishing a benefit-sharing mechanism involves identifying and implementing benefit allocation and distribution regulations and practical programmes. Stakeholder engagement will facilitate successful wind farm development and socio-economic benefit sharing. To embed the two key justices in the context of the Philippines, below are the vital perspectives for mechanism design:

1. **Labor & Workforce:** The Philippines has a massive advantage in its maritime workforce (seafarers), many of whom possess skills transferable to OFW. With the implementation of the Green Jobs Act (RA 10771) and recommended training and local content promotion. A "Coral to Cable" case in the context of just transition can be expected.

2. **Fisherfolk:** fishery industry is likely to be the most affected group. The fisherfolk should be carefully included in the full stage of the OFW development engagement and benefit-sharing mechanism discussion. No matter the MSP, CBA, or other mechanisms, the voice of the fisherman for the benefit distribution system set-up is essential.
3. **Free, Prior, and Informed Consent (FPIC):** Specifically for projects affecting Indigenous waters, ensuring that consent is given without coercion and before any project milestones are reached.
4. **Social License to Operate (SLTO):** the government should consider the SLTO in the Green Energy Auction Program (GEAP), projects could have the SLTO as a criterion or preference to encourage the realisation of fair and inclusive development.
5. **Third-Party Facilitation:** Hiring neutral ombudsmen or facilitators to manage public hearings, ensuring that developer-led meetings do not become one-sided "sales pitches."
6. **Grievance & Appeals Mechanisms:** Creating clear, low-cost legal pathways for communities to challenge decisions or report non-compliance with environmental or social agreements.

Some of the key authorities and developers can support the just transition through OFW development. The role and opportunities are presented below.

- **DOE** and **DENR:** Creating the Marine Spatial Plan and social-focused auction rules.
- **Developers:** Moving beyond "corporate social responsibility" to authentic, long-term benefit-sharing models and cooperation.
- **Fisherfolk Unions:** Leading the engagement for access rights, mitigation, compensation, benefit-sharing for gear loss or displacement.
- **TESDA & MARINA:** Standardising the curriculum for the OFW workforce.

Aligning with the recommended benefit-sharing approaches in the chapter, Table 5.5 give the high-level suggestion for the planning and implementation of benefit-sharing policies. In addition, transparency, early engagement, and an inclusive stakeholder engagement plan underpin the expected outcomes of the benefit-sharing policies and mechanisms.

Table 5.7

Consideration of Just Transition and Gender Inclusion

Benefit sharing	Recommended Considerations
Community Benefit Agreements (CBAs) **Community Development Funds (CDF)**	• Allocation of the benefit and resource management should focus on the public interests and support the sustainability-related projects for the social and environmental stewardship progress. • The assistance provided by the fund should focus on existing vulnerable groups and those that the OFW development may impact. • Empower the vulnerable stakeholders to engage in the sharing allocation decision. • The representative of the key stakeholder would need to be a decision maker for the agreements.
Local Employment & Training	• Prioritisation for the vulnerable groups and stakeholders in the local context. • Provide essential support for impacted, disabled or vulnerable people to have the opportunity for a job and training. • Training should support the local capacity building, which can help the local community understand the details and mechanisms for OFW development and knowledge transfer.
Supply Chain Localisation	• Identify and assess the industry sectors with development potential or advantage. • Prioritisation for industries impacted by OFW development and design the roadmap for workforce career transition. • The national supply chain development and localisation policy should be transparent and open for public consultation. • Assessment of the social and environmental impacts from the supply chain development and implement mitigation and compensation. • Cultivate a diverse and inclusive working environment for people with different backgrounds, genders, races, etc.
Infrastructure Co-Investment	• Assess the need and access for different stakeholders for the infrastructure and public service to design the benefit-sharing, e.g., grid and port improvement, transportation or health public service. • Identify the priority for infrastructure development, avoiding excessive benefits for certain privilege groups. • Infrastructure investment aims at sustainable infrastructure development and avoiding unnecessary investment.

In general, some principles and implementation for the developers and LGUs can consider improving job opportunities and engagement with fisherfolk, women, youth, and marginalised groups to be empowered and cultivate long-term capability, aligning with the OFW development in the study areas:

1. **Fisherfolk:** support the training programmes for supply/logistics roles, vessel support services, sea-based monitoring, co-use compensation management roles, to formalise the fishing groups in the OFW industry.
2. **Women:** seize the opportunities and institutional support for permit and consent, administration, community liaison, local service sector supply chains, and technical roles with targeted training (electrical, electrification micro-grids). Also, the gender-responsive training programmes will be vital.
3. **Young talent:** implement an internship and cultivate for long-term employment or cooperation opportunities aligning with the development pipeline.
4. **Other marginalised groups:** depend on dedicated access measures (quotas, reserved contracts) and support to navigate formal procurement.

For the analysis and recommendations in this study, we encourage the Philippine government and developers to consider the roles, risks, and opportunities of the groups mentioned above. In the decision procedure, benefit-sharing mechanism and progress review, their voice, conditions, and status should be identified and assessed (following Table 5.7) to ensure that the benefit-sharing mechanisms deliver a positive impact on society.

6.

Limitations of this Report

Data Availability

For the study areas, available province socio-economic-economic statistics in both areas are limited. The general local industries are understood through NIRAS' direct understanding of the market, but there is limited public reporting and statistics on those key factors and usual indexes are found in other markets. Philippine national level data can be found from reports published by different international organisations, such as the World Bank, Asian Development Bank, and the United Nations. Publicly available data for the study areas is limited to 2022 in most cases, and some datasets required for detailed regional analysis were not available. As offshore wind development advances, expanded data collection will support more refined analysis.

Data Availability

The investment and impact of the wind farm project can be significantly varied according to different site conditions and engineering as well as technical design. Thus, it is challenging to obtain precise LCOE or total cost estimates/investments for the two study areas. The uncertainties about the projects' total cost would lead to very different socio-economic impacts.

Furthermore, Philippine offshore wind policy is still evolving, which creates some uncertainty in assessing stakeholder engagement approaches, project costs, development schedules, and practical benefit-sharing arrangements. This study established a general 5-year development timeframe (with commissioning by 2030 and 2032) for the projects. Varying the development timeline can lead to different capabilities in establishing the supply chain workforce and associated costs.

Last but not least, this study acknowledges the recent surge in costs for offshore wind projects due to international economic turmoil and scarcity in the supply chain. This trend may lead to different considerations in the future for local content investments and project cost, which is a crucial limitation for this study.

In general, this study aims to provide a high-level overview of the study areas' potential socio-economic impact and the potential recommendations for the benefit-sharing mechanisms. The detailed assessment will need further on-the-ground investigation and stakeholder interview, as well as the policy and the project development design.

7. References

- Brelik, A., Nowaczyk, P., & Cheba, K. (2023). The economic importance of offshore wind energy development in Poland. Energies, 16(23), 7766. https://doi.org/10.3390/en16237766
- Buescher, N., Locke, J., and Valencia, P. (2024). Philippine Market Movers: An analysis of three high potential areas to accelerate the offshore wind market in the Philippines, RMI, 2024, https://rmi.org/insight/ analysis-to-accelerate-offshore-wind-market-in-the-philippines/
- CLIMACT. (2021, May). The socio-economic impact of 6 GW offshore wind development in Belgium (Confidential Draft). Belgian Offshore Platform.
- Connolly, K. (2020). The regional economic impacts of offshore wind energy developments in Scotland. Renewable Energy, 160, 148–159. https://doi.org/10.1016/j.renene.2020.06.065
- ERM, & Ocean Energy Pathway. (2025). Offshore wind development and its local socio-economic impact in Akita Prefecture: A critical analysis with local stakeholder voices.
- Department of Energy (Philippines). (2025). Power Development Plan 2023–2050. DOE. https://legacy.doe.gov.ph/sites/default/files/pdf/electric_power/development_plans/Power%20Development%20Plan%202023-2050.pdf.
- Flegg, A. T., & Webber, C. D. (2000). Regional size, regional specialization, and the FLQ formula. Regional Studies, 34(6), 563–569. https://doi.org/10.1080/00343400050085657
- GWEC (2024). The Philippines offshore wind supply chain study. https://www.gwec.net/gwec-news/philippines-steel-and-shipbuilding-scale-up-poised-to-anchor-apac-offshore-wind-growth
- Isard, W., Azis, I. J., Drennan, M. P., Miller, R. E., Saltzman, S., & Thorbecke, E. (1998). Methods of interregional and regional analysis. Ashgate.
- Joshi (2024). Annual technology baseline (ATB) and cost outlook for offshore wind in the Philippines. https ://doi.org/10.2172/2483812
- Jung, W. (2015). Analysis of the economic and environmental effects by the offshore wind power construction: In case of Kitakyushu City, Japan. Business and Management Studies, 1(2). http://bms.redfame.com
- Ko, H., & Park, J. (2024). Economic analysis of a 2.4 GW offshore wind farm in Southwest Korea. Journal of Wind Energy, 15(3), 30–37. https://doi.org/10.33519/kwea.2024.15.3.003
- KPMG P/S. (2023). Positive impact on society of an open door offshore wind farm integrated with power-to-X. KPMG P/S.
- Leontief, W.W. (1936) Quantitative Input and Output Relations in the Economic Systems of the United States. The Review of Economics and Statistics, 18, 105-125.
- Liang, X., Zheng, C., Zheng, L., Zhu, K., & Zhang, Z. (2025). Ocean economic input-output tables of coastal provinces in China. Scientific Data. https://doi.org/10.1038/s41597-025-05221-3
- Lin Chin-Hsu & Lin Shih-Mo (2020, February 27). 離岸風力技術創新外溢對我國經濟效益評估 [Assessment of R&D spillover effect of offshore wind in Taiwan]. 中原大學應用經濟模型研究中心.

- Mackinson, S., Curtis, H., Brown, R., McTaggart, K., Taylor, N., Neville, S. and Rogers, S., 2006. A report on the perceptions of the fishing industry into the potential socioeconomic impacts of offshore wind energy developments on their work patterns and income. Sci. Ser. Tech Rep., Cefas Lowestoft, 133: 99pp. https://www.cefas.co.uk/publications/techrep/tech133.pdf
- Miller, R. E., & Blair, P. D. (2009). Input–output analysis: Foundations and extensions (2nd ed.). Cambridge University Press.
- Morrison, W. I., & Smith, P. (1974). Nonsurvey input–output techniques at the small area level: An evaluation. Journal of Regional Science, 14(1), 1–14. https://doi.org/10.1111/j.1467-9787.1974.tb00483.x
- National Economic and Development Authority. (2023). Bicol Regional Development Plan 2023–2028. NEDA Region V. https://pdp.depdev.gov.ph/wp-content/uploads/2023/07/Bicol-RDP-2023-2028.pdf.
- National Economic and Development Authority. (2023). Western Visayas Regional Development Plan 2023–2028. NEDA Region VI. https://pdp.depdev.gov.ph/wp-content/uploads/2023/07/Western-Visayas-RDP.pdf.
- National Renewable Energy Laboratory. (2021, August). Power sector, supply chain, jobs, and emissions implications of 30 gigawatts of offshore wind power by 2030 (NREL/TP-5000-80031). U.S. Department of Energy. https://www.nrel.gov/publications/
- Ocean Energy Pathway, & COWI. (2025, February). Tamil Nadu offshore wind manufacturing supply chain investment study report. Ocean Energy Pathway. https://www.oceanenergypathway.org
- Reis, H., & Rua, A. (2009). An Input–Output Analysis: Linkages versus Leakages. International Economic Journal, 23(4), 527–544. https://doi.org/10.1080/10168730903372323
- Renewable Energy Institute. (2022, December). Socioeconomic analysis of offshore wind power development in Japan. Renewable Energy Institute.
- Round, J. I. (1983). Nonsurvey techniques: A critical review of the theory and the evidence. International Regional Science Review, 8(3), 189–212. https://doi.org/10.1177/016001768300800302
- Schallenberg-Rodriguez, J., & Inchausti-Sintes, F. (2021). Socio-economic impact of a 200 MW floating wind farm in Gran Canaria. Renewable and Sustainable Energy Reviews, 148, 111242. https://doi.org/10.1016/j.rser.2021.111242
- Scheld, A. M., Beckensteiner, J., Munroe, D. M., Powell, E. N., Borsetti, S., Hofmann, E. E., & Klinck, J. M. (2022). The Atlantic surfclam fishery and offshore wind energy development: 2. Assessing economic impacts. ICES Journal of Marine Science, 79(6), 1801-1814. https://academic.oup.com/icesjms/article/79/6/1801/6611672?login=true
- Swaminathan, A. M. (2009). Methods for generation of a regional input–output table for the state of Maharashtra: A comparative analysis (Working Paper No. UDE 29/6/2009). University of Mumbai, Department of Economics. https://archive.mu.ac.in/arts/social_science/eco/pdfs/vibhuti/wp29.pdf
- World Bank (2022). Offshore wind roadmap for the Philippines. https://documents1.worldbank.org/curated/en/099225004192234223/pdf/P1750040b777da0c30935a0e2aa346f4e26.pdf

8. Appendices

Appendix A - Detailed Economic Impact Results

Table A.0.1

Amount of Investment for two projects

Scenario		San Miguel Bay		Guimaras Strait	
		2029	2031	2030	2032
Scenario 1	Installed Capacity (MW)	1,000	2,000	500	1,500
	DevEX+CapEX (million pesos)	14,019	35,418	7,009	26,564
	OpEx (million pesos)	1,694	4,109	847	3,081
	Revenue of Net AEP	18,076	43,844	9,038	32,883
Scenario 2	Installed Capacity (MW)	1,000	2,000	500	1,500
	DevEX+CapEX (million pesos)	14,742	50,183	7,371	37,637
	OpEx (million pesos)	1,946	4,325	973	3,244
	Revenue of Net AEP	20,768	46,152	10,384	34,614

Table A.0.2

National GDP contribution (million pesos)

Project	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Scenario 0										
San Miguel Bay	-	-	4,086	5,213	5,061	6,031	7,891	7,661	7,438	7,221
Guimaras Strait	-	-	551	3,282	3,892	3,779	5,667	5,502	5,342	5,186
Total	4,638	8,494	8,954	9,810	13,558	13,163	12,780	12,407	108,021	104,875
Scenario 1										
San Miguel Bay	13,907	13,502	37,542	53,628	52,066	68,376	66,385	64,451	62,574	60,751
Guimaras Strait	-	5,115	4,966	25,171	33,816	32,831	48,215	46,810	45,447	44,123
Total	13,907	18,618	42,508	78,799	85,882	101,207	114,599	111,262	108,021	104,875
Scenario 2										
San Miguel Bay	14,846	14,413	55,918	75,064	72,878	71,975	69,879	67,843	65,867	63,949
Guimaras Strait	-	5,539	5,377	38,101	48,076	46,676	50,752	49,274	47,839	46,446
Total	14,846	19,952	61,295	113,166	20,954	18,651	120,631	117,117	113,706	110,394

Note. The values are discounted at a discount rate of 3%.

Table A.0.2 continued

National GDP contribution (million pesos)

Project	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Scenario 0										
San Miguel Bay	7,011	6,807	6,609	6,416	6,229	6,048	5,872	5,701	5,535	5,373
Guimaras Strait	5,035	4,888	4,746	4,608	4,474	4,343	4,217	4,094	3,975	3,859
Total	12,046	11,695	11,355	11,024	10,703	10,391	10,088	9,795	9,509	9,232
Scenario 1										
San Miguel Bay	58,982	57,264	55,596	53,977	52,405	50,878	49,397	47,958	46,561	45,205
Guimaras Strait	42,838	41,590	40,379	39,203	38,061	36,953	35,876	34,831	33,817	32,832
Total	101,820	98,854	95,975	93,180	90,466	87,831	85,273	82,789	80,378	78,037
Scenario 2										
San Miguel Bay	62,086	60,278	58,522	56,818	55,163	53,556	51,996	50,482	49,012	47,584
Guimaras Strait	45,093	43,779	42,504	41,266	40,064	38,897	37,764	36,665	35,597	34,560
Total	107,179	104,057	101,027	98,084	95,227	92,454	89,761	87,146	84,608	82,144

Project	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
Scenario 0										
San Miguel Bay	5,217	5,065	4,917	4,774	4,635	4,500	4,369	4,242	4,118	3,998
Guimaras Strait	3,747	3,637	3,531	3,429	3,329	3,232	3,138	3,046	2,958	2,871
Total	8,963	8,702	8,449	8,203	7,964	7,732	7,507	7,288	7,076	6,870
Scenario 1										
San Miguel Bay	43,888	42,610	41,369	40,164	38,994	37,858	36,756	35,685	34,646	33,637
Guimaras Strait	31,876	30,947	30,046	29,171	28,321	27,496	26,695	25,918	25,163	24,430
Total	75,764	73,557	71,415	69,335	67,315	65,354	63,451	61,603	59,809	58,067
Scenario 2										
San Miguel Bay	46,198	44,852	43,546	42,278	41,046	39,851	38,690	37,563	36,469	35,407
Guimaras Strait	33,553	32,576	31,627	30,706	29,812	28,943	28,100	27,282	26,487	25,716
Total	79,751	77,428	75,173	72,984	70,858	68,794	66,790	64,845	62,956	61,123

Project	2057	2058	2059	2060	2061	2062	2027-2062 Total	2027-2062 Average
Scenario 0								
San Miguel Bay	-	-	4,086	5,213	5,061	6,031	74,838	4,857
Guimaras Strait	-	-	551	3,282	3,892	3,779	123,938	3,443
Total	4,638	8,494	8,954	9,810	13,558	13,163	298,776	8,299
Scenario 1								
San Miguel Bay	32,657	31,706	30,782	17,564	17,053	16,556	1,543,331	42,870
Guimaras Strait	23,718	23,028	22,357	21,706	15,281	14,836	1,063,863	30,396
Total	56,375	54,733	53,139	39,270	32,334	31,392	2,607,194	72,422
Scenario 2								
San Miguel Bay	34,376	33,374	32,402	17,302	16,798	16,309	1,630,115	46,516
Guimaras Strait	24,967	24,240	23,534	22,848	15,528	15,076	1,124,391	33,008
Total	59,342	57,614	55,936	40,150	32,326	31,385	2,754,505	78,607

Note. The values are discounted at a discount rate of 3%.

Table A.0.3

Job and salary contribution (million pesos)

Project	Index	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Scenario 0											
San Miguel Bay	Employment (1000 FTE)	-	-	6	6	6	7	9	9	9	9
	Income (million PHP)	-	-	1,801	1,755	1,704	1,782	2,332	2,264	2,198	2,134
Guimaras Strait	Employment (1000 FTE)	-	-	1	7	7	7	10	10	10	10
	Income (million PHP)	-	-	270	1,471	1,393	1,353	1,685	1,636	1,588	1,542
Scenario 1											
San Miguel Bay	Employment (1000 FTE)	32	32	97	123	123	141	141	141	141	141
	Income (million PHP)	5,646	5,482	15,103	18,266	17,734	20,050	19,466	18,899	18,349	17,814
Guimaras Strait	Employment (1000 FTE)	0	11	11	70	88	88	107	107	107	107
	Income (million PHP)	0	2,182	2,119	10,308	12,159	11,805	14,224	13,810	13,408	13,017
Scenario 2											
San Miguel Bay	Employment (1000 FTE)	34	34	148	180	180	148	148	148	148	148
	Income (million PHP)	6,026	5,850	21,891	25,815	25,063	21,106	20,491	19,894	19,315	18,752
Guimaras Strait	Employment (1000 FTE)	0	12	12	109	130	130	113	113	113	113
	Income (million PHP)	0	2,356	2,287	15,145	17,314	16,810	14,973	14,537	14,113	13,702

Project	Index	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Scenario 0											
San Miguel Bay	Employment (1000 FTE)	9	9	9	9	9	9	9	9	9	9
	Income (million PHP)	2,072	2,011	1,953	1,896	1,841	1,787	1,735	1,684	1,635	1,588
Guimaras Strait	Employment (1000 FTE)	10	10	10	10	10	10	10	10	10	10
	Income (million PHP)	1,497	1,453	1,411	1,370	1,330	1,291	1,254	1,217	1,182	1,147
Scenario 1											
San Miguel Bay	Employment (1000 FTE)	141	141	141	141	141	141	141	141	141	141
	Income (million PHP)	17,296	16,792	16,303	15,828	15,367	14,919	14,485	14,063	13,653	13,256
Guimaras Strait	Employment (1000 FTE)	107	107	107	107	107	107	107	107	107	107
	Income (million PHP)	12,638	12,270	11,913	11,566	11,229	10,902	10,584	10,276	9,977	9,686
Scenario 2											
San Miguel Bay	Employment (1000 FTE)	148	148	148	148	148	148	148	148	148	148
	Income (million PHP)	18,206	17,676	17,161	16,661	16,176	15,705	15,247	14,803	14,372	13,953
Guimaras Strait	Employment (1000 FTE)	113	113	113	113	113	113	113	113	113	113
	Income (million PHP)	13,303	12,916	12,540	12,174	11,820	11,475	11,141	10,817	10,502	10,196

Table A.0.3 continued

Job and salary contribution (million pesos)

Project	Index	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
Scenario 0											
San Miguel Bay	Employment (1000 FTE)	9	9	9	9	9	9	9	9	9	9
	Income (million PHP)	1,542	1,497	1,453	1,411	1,370	1,330	1,291	1,253	1,217	1,181
Guimaras Strait	Employment (1000 FTE)	10	10	10	10	10	10	10	10	10	10
	Income (million PHP)	1,114	1,081	1,050	1,019	990	961	933	906	879	854
Scenario 1											
San Miguel Bay	Employment (1000 FTE)	141	141	141	141	141	141	141	141	141	141
	Income (million PHP)	12,870	12,495	12,131	11,777	11,434	11,101	10,778	10,464	10,159	9,863
Guimaras Strait	Employment (1000 FTE)	107	107	107	107	107	107	107	107	107	107
	Income (million PHP)	9,404	9,130	8,864	8,606	8,355	8,112	7,876	7,646	7,424	7,207
Scenario 2											
San Miguel Bay	Employment (1000 FTE)	148	148	148	148	148	148	148	148	148	148
	Income (million PHP)	13,547	13,152	12,769	12,397	12,036	11,686	11,345	11,015	10,694	10,383
Guimaras Strait	Employment (1000 FTE)	113	113	113	113	113	113	113	113	113	113
	Income (million PHP)	9,899	9,611	9,331	9,059	8,795	8,539	8,290	8,049	7,814	7,587

Project	Index	2057	2058	2059	2060	2061	2062	2033~2062	2027~2062
Scenario 0									
San Miguel Bay	Employment (1000 FTE)	9	9	9	5	5	5	8	8
	Income (million PHP)	1,147	1,114	1,081	557	540	525	1,463	1,521
Guimaras Strait	Employment (1000 FTE)	10	10	10	9	6	6	8	9
	Income (million PHP)	829	805	781	680	478	464	1,053	1,114
Scenario 1									
San Miguel Bay	Employment (1000 FTE)	141	141	141	83	83	83	135	128
	Income (million PHP)	9,576	9,297	9,026	5,151	5,000	4,855	12,749	12,910
Guimaras Strait	Employment (1000 FTE)	107	107	107	107	78	78	105	98
	Income (million PHP)	6,997	6,794	6,596	6,404	4,508	4,377	9,460	9,211
Scenario 2									
San Miguel Bay	Employment (1000 FTE)	148	148	148	82	82	82	142	138
	Income (million PHP)	10,080	9,787	9,502	5,074	4,926	4,782	13,386	14,093
Guimaras Strait	Employment (1000 FTE)	113	113	113	113	79	79	111	106
	Income (million PHP)	7,366	7,151	6,943	6,741	4,581	4,448	9,947	10,066

Table A.0.4

National GDP by sector contribution (million pesos)

Scenario 1

Sector	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
San Miguel Bay										
Total National GDP (million PHP)	**13,907**	**13,502**	**37,542**	**53,628**	**52,066**	**68,376**	**66,385**	**64,451**	**62,574**	**60,751**
Agriculture, forestry, and fishing	758	736	3,196	4,825	4,685	5,523	5,362	5,206	5,055	4,907
Mining and quarrying	80	77	206	273	265	334	325	315	306	297
Manufacturing	2,223	2,158	5,708	7,587	7,366	9,327	9,055	8,792	8,536	8,287
Electricity, steam, water and waste management	557	540	1 ,482	1,805	1,753	2,003	1,945	1,888	1,833	1,780
Offshore wind	-	-	-	9,971	9,680	22,796	22,132	21,487	20,861	20,254
Construction	131	127	359	787	765	1,277	1,240	1,204	1,168	1 ,134
Wholesale and retail trade; repair of motor vehicles and motorcycles	2,371	2,302	6,276	7,650	7,428	8,521	8,273	8,032	7,798	7,571
Transportation and storage	982	953	2,699	2,645	2,568	2,110	2,049	1,989	1,931	1,875
Accommodation and food service activities	199	194	535	650	631	716	695	675	655	636
Information and communication	262	254	696	833	808	905	879	853	828	804
Financial and insurance activities	925	899	2,461	2,955	2,869	3,230	3,136	3,045	2,956	2,870
Real estate and ownership of dwellings	1,038	1,007	2,739	3,192	3,099	3,390	3,292	3,196	3,103	3,012
Professional and business services	1,981	1,924	4,641	3,812	3,701	2,557	2,483	2,410	2,340	2,272
Public Administration and Defense; Compulsory social security	320	311	855	1,032	1,002	1,132	1,099	1,067	1,036	1,006
Education	1,521	1,477	4,192	3,809	3,698	2,584	2,509	2,436	2,365	2,296
Human health and social work activities	239	232	638	770	748	845	820	797	773	751
Other services	322	312	859	1,031	1,001	1 ,124	1,091	1,060	1,029	999
Guimaras Strait										
Total National GDP (million PHP)	**-**	**5,115**	**4,966**	**29,992**	**38,497**	**37,376**	**48,215**	**46,810**	**45,447**	**44,123**
Agriculture, forestry, and fishing	-	- 150	- 145	1,897	3,182	3,090	4,127	4,007	3,890	3,777
Mining and quarrying	-	33	32	174	212	206	252	244	237	230
Manufacturing	-	813	790	4,376	5,311	5,156	6,195	6,015	5,839	5,669
Electricity, steam, water and waste management	-	161	156	893	1,015	985	1,012	983	954	926
Offshore wind	-	-	-	-	4,840	4,699	16,599	16,115	15,646	15,190
Construction	-	67	65	348	538	522	893	867	842	817
Wholesale and retail trade; repair of motor vehicles and motorcycles	-	841	816	4,694	5,375	5,218	5,442	5,284	5,130	4,980
Transportation and storage	-	516	501	2,814	2,857	2,774	2,049	1,990	1,932	1,875
Accommodation and food service activities	-	71	69	405	464	450	467	454	441	428
Information and communication	-	109	106	613	695	675	685	665	645	627
Financial and insurance activities	-	347	337	1,934	2,189	2,126	2,157	2,094	2,033	1,974
Real estate and ownership of dwellings	-	371	360	2,037	2,261	2,195	2,134	2,072	2,012	1,953
Professional and business services	-	908	881	4,157	3,742	3,633	1,840	1,786	1,734	1,683
Public Administration and Defense; Compulsory social security	-	131	127	740	846	822	849	824	800	777
Education	-	639	621	3,445	3,293	3,197	1,827	1,774	1,722	1,672
Human health and social work activities	-	101	98	574	658	638	661	642	623	605
Other services	-	157	152	890	1,019	990	1,025	995	966	938

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 1

Sector	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
San Miguel Bay										
Total National GDP (million PHP)	**58,982**	**57,264**	**55,596**	**53,977**	**52,405**	**50,878**	**49,397**	**47,958**	**46,561**	**45,205**
Agriculture, forestry, and fishing	4,764	4,626	4,491	4,360	4,233	4,110	3,990	3,874	3,761	3,652
Mining and quarrying	288	280	272	264	256	249	242	235	228	221
Manufacturing	8,046	7,811	7,584	7,363	7,148	6,940	6,738	6,542	6,351	6,166
Electricity, steam, water and waste management	1,728	1,678	1,629	1,582	1,536	1,491	1,447	1,405	1,364	1,325
Offshore wind	19,664	19,091	18,535	17,995	17,471	16,962	16,468	15,988	15,523	15,071
Construction	1,101	1,069	1,038	1,008	979	950	922	896	869	844
Wholesale and retail trade; repair of motor vehicles and motorcycles	7,351	7,136	6,929	6,727	6,531	6,341	6,156	5,977	5,803	5,634
Transportation and storage	1,820	1,767	1,716	1,666	1,617	1,570	1,524	1,480	1,437	1,395
Accommodation and food service activities	618	600	582	565	549	533	517	502	487	473
Information and communication	781	758	736	715	694	674	654	635	616	598
Financial and insurance activities	2,787	2,705	2,627	2,550	2,476	2,404	2,334	2,266	2,200	2,136
Real estate and ownership of dwellings	2,925	2,839	2,757	2,676	2,598	2,523	2,449	2,378	2,309	2,241
Professional and business services	2,206	2,142	2,079	2,019	1,960	1,903	1,847	1,794	1,741	1,691
Public Administration and Defense; Compulsory social security	976	948	920	893	867	842	818	794	771	748
Education	2,229	2,164	2,101	2,040	1,981	1,923	1,867	1,813	1,760	1,709
Human health and social work activities	729	708	687	667	648	629	611	593	575	559
Other services	970	941	914	887	862	836	812	788	766	743
Guimaras Strait										
Total National GDP (million PHP)	**42,838**	**41,590**	**40,379**	**39,203**	**38,061**	**36,953**	**35,876**	**34,831**	**33,817**	**32,832**
Agriculture, forestry, and fishing	3,667	3,560	3,457	3,356	3,258	3,163	3,071	2,982	2,895	2,810
Mining and quarrying	224	217	211	205	199	193	187	182	176	171
Manufacturing	5,504	5,344	5,188	5,037	4,890	4,748	4,610	4,475	4,345	4,219
Electricity, steam, water and waste management	899	873	848	823	799	776	753	731	710	689
Offshore wind	14,748	14,318	13,901	13,496	13,103	12,722	12,351	11,991	11,642	11,303
Construction	793	770	748	726	705	684	664	645	626	608
Wholesale and retail trade; repair of motor vehicles and motorcycles	4,835	4,695	4,558	4,425	4,296	4,171	4,050	3,932	3,817	3,706
Transportation and storage	1,821	1,768	1,716	1,666	1,618	1,571	1,525	1,480	1,437	1,395
Accommodation and food service activities	415	403	391	380	369	358	348	338	328	318
Information and communication	608	591	573	557	540	525	509	495	480	466
Financial and insurance activities	1,917	1,861	1,807	1,754	1,703	1,653	1,605	1,558	1,513	1,469
Real estate and ownership of dwellings	1,896	1,841	1,787	1,735	1,685	1,636	1,588	1,542	1,497	1,453
Professional and business services	1,634	1,587	1,541	1,496	1,452	1,410	1,369	1,329	1,290	1,253
Public Administration and Defense; Compulsory social security	754	732	711	690	670	651	632	613	596	578
Education	1,623	1,576	1,530	1,486	1,442	1,400	1,359	1,320	1,281	1,244
Human health and social work activities	588	571	554	538	522	507	492	478	464	450
Other services	910	884	858	833	809	785	762	740	719	698

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 1

Sector	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
San Miguel Bay										
Total National GDP (million PHP)	**43,888**	**42,610**	**41,369**	**40,164**	**38,994**	**37,858**	**36,756**	**35,685**	**34,646**	**33,637**
Agriculture, forestry, and fishing	3,545	3,442	3,342	3,244	3,150	3,058	2,969	2,883	2,799	2,717
Mining and quarrying	215	208	202	196	191	185	180	175	169	164
Manufacturing	5,987	5,812	5,643	5,479	5,319	5,164	5,014	4,868	4,726	4,588
Electricity, steam, water and waste management	1,286	1,249	1,212	1,177	1,143	1,109	1,077	1,046	1,015	986
Offshore wind	14,632	14,206	13,792	13,390	13,000	12,621	12,254	11,897	11,550	11,214
Construction	820	796	772	750	728	707	686	666	647	628
Wholesale and retail trade; repair of motor vehicles and motorcycles	5,469	5,310	5,156	5,005	4,860	4,718	4,581	4,447	4,318	4,192
Transportation and storage	1,354	1,315	1,277	1,239	1,203	1,168	1,134	1,101	1,069	1,038
Accommodation and food service activities	459	446	433	420	408	396	385	374	363	352
Information and communication	581	564	548	532	516	501	487	472	459	445
Financial and insurance activities	2,073	2,013	1,954	1,898	1,842	1,789	1,736	1,686	1,637	1,589
Real estate and ownership of dwellings	2,176	2,113	2,051	1,991	1,933	1,877	1,822	1,769	1,718	1,668
Professional and business services	1,641	1,594	1,547	1,502	1,458	1,416	1,375	1,335	1,296	1,258
Public Administration and Defense; Compulsory social security	726	705	685	665	645	627	608	591	573	557
Education	1,659	1,610	1,564	1,518	1,474	1,431	1,389	1,349	1,309	1,271
Human health and social work activities	542	527	511	496	482	468	454	441	428	416
Other services	722	701	680	660	641	622	604	587	570	553
Guimaras Strait										
Total National GDP (million PHP)	**31,876**	**30,947**	**30,046**	**29,171**	**28,321**	**27,496**	**26,695**	**25,918**	**25,163**	**24,430**
Agriculture, forestry, and fishing	2,729	2,649	2,572	2,497	2,424	2,354	2,285	2,219	2,154	2,091
Mining and quarrying	166	162	157	152	148	144	139	135	131	128
Manufacturing	4,096	3,976	3,861	3,748	3,639	3,533	3,430	3,330	3,233	3,139
Electricity, steam, water and waste management	669	650	631	612	595	577	560	544	528	513
Offshore wind	10,974	10,654	10,344	10,043	9,750	9,466	9,190	8,923	8,663	8,411
Construction	590	573	556	540	525	509	494	480	466	452
Wholesale and retail trade; repair of motor vehicles and motorcycles	3,598	3,493	3,391	3,293	3,197	3,104	3,013	2,925	2,840	2,758
Transportation and storage	1,355	1,315	1,277	1,240	1,204	1,169	1,135	1,102	1,069	1,038
Accommodation and food service activities	309	300	291	283	275	267	259	251	244	237
Information and communication	453	439	427	414	402	390	379	368	357	347
Financial and insurance activities	1,426	1,385	1,344	1,305	1,267	1,230	1,194	1,160	1,126	1,093
Real estate and ownership of dwellings	1,411	1,370	1,330	1,291	1,254	1,217	1,182	1,147	1,114	1,081
Professional and business services	1,216	1,181	1,146	1,113	1,081	1,049	1,019	989	960	932
Public Administration and Defense; Compulsory social security	561	545	529	514	499	484	470	456	443	430
Education	1,208	1,173	1,139	1,105	1,073	1,042	1,012	982	953	926
Human health and social work activities	437	425	412	400	389	377	366	356	345	335
Other services	677	658	638	620	602	584	567	551	535	519

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 1

Sector	2057	2058	2059	2060	2061	2062	2033~2062 Avg.	2027~2062 Avg.
San Miguel Bay								
Total National GDP (million PHP)	**32,657**	**31,706**	**30,782**	**17,564**	**17,053**	**16,556**	**43,477**	**42,870**
Agriculture, forestry, and fishing	2,638	2,561	2,486	1,419	1,377	1,337	3,512	3,474
Mining and quarrying	160	155	151	86	83	81	213	211
Manufacturing	4,455	4,325	4,199	2,396	2,326	2,258	5,931	5,897
Electricity, steam, water and waste management	957	929	902	515	500	485	1,274	1,288
Offshore wind	10,887	10,570	10,262	5,856	5,685	5,520	14,495	13,258
Construction	610	592	575	328	318	309	812	772
Wholesale and retail trade; repair of motor vehicles and motorcycles	4,070	3,951	3,836	2,189	2,125	2,063	5,418	5,475
Transportation and storage	1,008	978	950	542	526	511	1,342	1,450
Accommodation and food service activities	342	332	322	184	179	173	455	461
Information and communication	432	420	407	233	226	219	576	584
Financial and insurance activities	1,543	1,498	1,454	830	806	782	2,054	2,082
Real estate and ownership of dwellings	1,619	1,572	1,526	871	846	821	2,156	2,198
Professional and business services	1,221	1,186	1,151	657	638	619	1,626	1,872
Public Administration and Defense; Compulsory social security	541	525	509	291	282	274	720	729
Education	1,234	1,198	1,163	664	645	626	1,643	1,849
Human health and social work activities	404	392	380	217	211	205	537	544
Other services	537	521	506	289	280	272	715	725
Guimaras Strait								
Total National GDP (million PHP)	**23,718**	**23,028**	**22,357**	**21,706**	**15,281**	**14,836**	**32,065**	**29,942**
Agriculture, forestry, and fishing	2,030	1,971	1,914	1,858	1,308	1,270	2,745	2,578
Mining and quarrying	124	120	117	113	80	77	167	162
Manufacturing	3,048	2,959	2,873	2,789	1,963	1,906	4,120	4,001
Electricity, steam, water and waste management	498	483	469	456	321	311	673	669
Offshore wind	8,166	7,928	7,697	7,473	5,261	5,108	11,039	9,735
Construction	439	426	414	402	283	275	594	553
Wholesale and retail trade; repair of motor vehicles and motorcycles	2,677	2,599	2,524	2,450	1,725	1,675	3,619	3,586
Transportation and storage	1,008	979	950	923	649	631	1,363	1,439
Accommodation and food service activities	230	223	217	210	148	144	311	308
Information and communication	337	327	317	308	217	211	455	453
Financial and insurance activities	1,061	1,030	1,000	971	684	664	1,435	1,428
Real estate and ownership of dwellings	1,050	1,019	990	961	676	657	1,419	1,423
Professional and business services	905	879	853	828	583	566	1,223	1,429
Public Administration and Defense; Compulsory social security	418	406	394	382	269	261	565	560
Education	899	873	847	822	579	562	1,215	1,361
Human health and social work activities	325	316	307	298	210	204	440	436
Other services	504	489	475	461	325	315	681	676

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 2

Sector	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
San Miguel Bay										
Total National GDP (million PHP)	**14,846**	**14,413**	**55,918**	**75,064**	**72,878**	**71,975**	**69,879**	**67,843**	**65,867**	**63,949**
Agriculture, forestry, and fishing	852	827	5,006	6,856	6,656	5,814	5,645	5,480	5,321	5,166
Mining and quarrying	84	82	329	410	398	352	342	332	322	313
Manufacturing	2,351	2,282	8,583	10,869	10,552	9,818	9,532	9,254	8,985	8,723
Electricity, steam, water and waste management	593	576	2,168	2,569	2,494	2,109	2,048	1,988	1,930	1,874
Offshore wind	0	0	0	11,456	11,122	23,996	23,297	22,618	21,959	21,320
Construction	144	140	4,046	4,438	4,309	1,344	1,305	1,267	1,230	1,194
Wholesale and retail trade; repair of motor vehicles and motorcycles	2,525	2,451	9,349	11,048	10,727	8,970	8,708	8,455	8,209	7,970
Transportation and storage	1,078	1,046	3,323	3,300	3,204	2,221	2,156	2,094	2,033	1,973
Accommodation and food service activities	213	207	772	914	887	754	732	710	690	670
Information and communication	279	271	1,012	1,183	1,148	953	925	898	872	847
Financial and insurance activities	986	958	3,621	4,236	4,113	3,400	3,301	3,205	3,112	3,021
Real estate and ownership of dwellings	1,104	1,072	3,876	4,457	4,327	3,569	3,465	3,364	3,266	3,171
Professional and business services	2,025	1,966	5,360	4,635	4,500	2,692	2,613	2,537	2,463	2,392
Public Administration and Defense; Compulsory social security	341	331	1,240	1,460	1,417	1,191	1,157	1,123	1,090	1,058
Education	1,673	1,624	5,064	4,685	4,548	2,720	2,641	2,564	2,489	2,417
Human health and social work activities	255	247	925	1,090	1,058	890	864	839	814	790
Other services	343	333	1,244	1,458	1,416	1,183	1,149	1,115	1,083	1,051
Guimaras Strait										
Total National GDP (million PHP)	**-**	**5,539**	**5,377**	**43,322**	**53,145**	**51,597**	**50,752**	**49,274**	**47,839**	**46,446**
Agriculture, forestry, and fishing	-	(105)	(102)	3,275	4,659	4,523	4,344	4,218	4,095	3,976
Mining and quarrying	-	35	34	270	315	306	265	257	250	242
Manufacturing	-	867	841	6,353	7,450	7,233	6,521	6,331	6,147	5,968
Electricity, steam, water and waste management	-	173	168	1,276	1,420	1,379	1,066	1,035	1,004	975
Offshore wind	-	-	-	-	5,561	5,399	17,472	16,964	16,469	15,990
Construction	-	74	72	3,029	3,172	3,080	940	913	886	860
Wholesale and retail trade; repair of motor vehicles and motorcycles	-	905	878	6,746	7,545	7,325	5,729	5,562	5,400	5,243
Transportation and storage	-	570	553	3,477	3,541	3,438	2,157	2,094	2,033	1,974
Accommodation and food service activities	-	77	75	567	637	618	492	478	464	450
Information and communication	-	118	114	861	958	930	721	700	679	660
Financial and insurance activities	-	373	362	2,758	3,059	2,970	2,271	2,205	2,140	2,078
Real estate and ownership of dwellings	-	398	386	2,792	3,062	2,973	2,247	2,181	2,118	2,056
Professional and business services	-	928	901	4,694	4,324	4,198	1,936	1,880	1,825	1,772
Public Administration and Defense; Compulsory social security	-	141	137	1,038	1,163	1,129	894	868	843	818
Education	-	708	687	4,133	3,977	3,861	1,923	1,867	1,813	1,760
Human health and social work activities	-	109	106	806	904	878	696	676	656	637
Other services	-	170	165	1,246	1,398	1,357	1,078	1,047	1,017	987

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 2

Sector	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
San Miguel Bay										
Total National GDP (million PHP)	**62,086**	**60,278**	**58,522**	**56,818**	**55,163**	**53,556**	**51,996**	**50,482**	**49,012**	**47,584**
Agriculture, forestry, and fishing	5,015	4,869	4,727	4,590	4,456	4,326	4,200	4,078	3,959	3,844
Mining and quarrying	304	295	286	278	270	262	254	247	240	233
Manufacturing	8,469	8,222	7,983	7,750	7,525	7,306	7,093	6,886	6,686	6,491
Electricity, steam, water and waste management	1,819	1,766	1,715	1,665	1,616	1,569	1,524	1,479	1,436	1,394
Offshore wind	20,699	20,096	19,511	18,942	18,391	17,855	17,335	16,830	16,340	15,864
Construction	1,159	1,126	1,093	1,061	1,030	1,000	971	943	915	889
Wholesale and retail trade; repair of motor vehicles and motorcycles	7,737	7,512	7,293	7,081	6,875	6,674	6,480	6,291	6,108	5,930
Transportation and storage	1,916	1,860	1,806	1,753	1,702	1,653	1,605	1,558	1,512	1,468
Accommodation and food service activities	650	631	613	595	578	561	544	529	513	498
Information and communication	822	798	775	752	730	709	688	668	649	630
Financial and insurance activities	2,933	2,848	2,765	2,684	2,606	2,530	2,457	2,385	2,316	2,248
Real estate and ownership of dwellings	3,078	2,989	2,902	2,817	2,735	2,656	2,578	2,503	2,430	2,359
Professional and business services	2,322	2,254	2,189	2,125	2,063	2,003	1,945	1,888	1,833	1,780
Public Administration and Defense; Compulsory social security	1,028	998	969	940	913	886	861	836	811	788
Education	2,347	2,278	2,212	2,147	2,085	2,024	1,965	1,908	1,852	1,798
Human health and social work activities	767	745	723	702	682	662	643	624	606	588
Other services	1,021	991	962	934	907	881	855	830	806	782
Guimaras Strait										
Total National GDP (million PHP)	**45,093**	**43,779**	**42,504**	**41,266**	**40,064**	**38,897**	**37,764**	**36,665**	**35,597**	**34,560**
Agriculture, forestry, and fishing	3,860	3,748	3,638	3,532	3,430	3,330	3,233	3,139	3,047	2,958
Mining and quarrying	235	228	222	215	209	203	197	191	186	180
Manufacturing	5,794	5,625	5,461	5,302	5,148	4,998	4,852	4,711	4,574	4,441
Electricity, steam, water and waste management	947	919	892	866	841	817	793	770	747	726
Offshore wind	15,524	15,072	14,633	14,207	13,793	13,391	13,001	12,622	12,255	11,898
Construction	835	811	787	764	742	720	699	679	659	640
Wholesale and retail trade; repair of motor vehicles and motorcycles	5,090	4,942	4,798	4,658	4,522	4,391	4,263	4,139	4,018	3,901
Transportation and storage	1,917	1,861	1,807	1,754	1,703	1,653	1,605	1,558	1,513	1,469
Accommodation and food service activities	437	424	412	400	388	377	366	355	345	335
Information and communication	640	622	604	586	569	552	536	521	505	491
Financial and insurance activities	2,018	1,959	1,902	1,846	1,793	1,740	1,690	1,640	1,593	1,546
Real estate and ownership of dwellings	1,996	1,938	1,881	1,827	1,773	1,722	1,672	1,623	1,576	1,530
Professional and business services	1,720	1,670	1,622	1,574	1,529	1,484	1,441	1,399	1,358	1,319
Public Administration and Defense; Compulsory social security	794	771	749	727	706	685	665	646	627	609
Education	1,709	1,659	1,611	1,564	1,518	1,474	1,431	1,389	1,349	1,310
Human health and social work activities	619	601	583	566	550	534	518	503	488	474
Other services	958	930	903	877	851	827	802	779	756	734

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 2

Sector	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
San Miguel Bay										
Total National GDP (million PHP)	**46,198**	**44,852**	**43,546**	**42,278**	**41,046**	**39,851**	**38,690**	**37,563**	**36,469**	**35,407**
Agriculture, forestry, and fishing	3,732	3,623	3,518	3,415	3,316	3,219	3,125	3,034	2,946	2,860
Mining and quarrying	226	219	213	207	201	195	189	184	178	173
Manufacturing	6,302	6,118	5,940	5,767	5,599	5,436	5,278	5,124	4,975	4,830
Electricity, steam, water and waste management	1,354	1,314	1,276	1,239	1,203	1,168	1,134	1,101	1,069	1,037
Offshore wind	15,402	14,953	14,518	14,095	13,684	13,286	12,899	12,523	12,158	11,804
Construction	863	838	813	789	766	744	722	701	681	661
Wholesale and retail trade; repair of motor vehicles and motorcycles	5,757	5,590	5,427	5,269	5,115	4,966	4,822	4,681	4,545	4,413
Transportation and storage	1,426	1,384	1,344	1,305	1,267	1,230	1,194	1,159	1,125	1,093
Accommodation and food service activities	484	470	456	443	430	417	405	393	382	371
Information and communication	612	594	576	560	543	528	512	497	483	469
Financial and insurance activities	2,183	2,119	2,057	1,997	1,939	1,883	1,828	1,775	1,723	1,673
Real estate and ownership of dwellings	2,291	2,224	2,159	2,096	2,035	1,976	1,918	1,863	1,808	1,756
Professional and business services	1,728	1,677	1,629	1,581	1,535	1,490	1,447	1,405	1,364	1,324
Public Administration and Defense; Compulsory social security	765	742	721	700	679	660	640	622	604	586
Education	1,746	1,695	1,646	1,598	1,551	1,506	1,462	1,420	1,378	1,338
Human health and social work activities	571	554	538	523	507	493	478	464	451	438
Other services	760	737	716	695	675	655	636	618	600	582
Guimaras Strait										
Total National GDP (million PHP)	**33,553**	**32,576**	**31,627**	**30,706**	**29,812**	**28,943**	**28,100**	**27,282**	**26,487**	**25,716**
Agriculture, forestry, and fishing	2,872	2,789	2,707	2,628	2,552	2,478	2,405	2,335	2,267	2,201
Mining and quarrying	175	170	165	160	156	151	147	142	138	134
Manufacturing	4,311	4,186	4,064	3,945	3,830	3,719	3,611	3,505	3,403	3,304
Electricity, steam, water and waste management	704	684	664	645	626	608	590	573	556	540
Offshore wind	11,551	11,215	10,888	10,571	10,263	9,964	9,674	9,392	9,119	8,853
Construction	621	603	586	569	552	536	520	505	491	476
Wholesale and retail trade; repair of motor vehicles and motorcycles	3,787	3,677	3,570	3,466	3,365	3,267	3,172	3,079	2,990	2,903
Transportation and storage	1,426	1,385	1,344	1,305	1,267	1,230	1,194	1,160	1,126	1,093
Accommodation and food service activities	325	316	307	298	289	281	272	264	257	249
Information and communication	476	463	449	436	423	411	399	387	376	365
Financial and insurance activities	1,501	1,458	1,415	1,374	1,334	1,295	1,257	1,221	1,185	1,151
Real estate and ownership of dwellings	1,485	1,442	1,400	1,359	1,320	1,281	1,244	1,208	1,172	1,138
Professional and business services	1,280	1,243	1,207	1,172	1,137	1,104	1,072	1,041	1,011	981
Public Administration and Defense; Compulsory social security	591	574	557	541	525	510	495	480	466	453
Education	1,271	1,234	1,198	1,164	1,130	1,097	1,065	1,034	1,004	974
Human health and social work activities	460	447	434	421	409	397	386	374	363	353
Other services	713	692	672	652	633	615	597	580	563	546

Table A.0.4 continued

National GDP by sector contribution (million pesos)

Scenario 2

Sector	2057	2058	2059	2060	2061	2062	2033~2062 Avg.	2027~2062 Avg.
San Miguel Bay								
Total National GDP (million PHP)	**34,376**	**33,374**	**32,402**	**17,302**	**16,798**	**16,309**	**45,650**	**46,516**
Agriculture, forestry, and fishing	2,777	2,696	2,617	1,398	1,357	1,317	3,687	3,795
Mining and quarrying	168	163	158	85	82	80	223	232
Manufacturing	4,689	4,553	4,420	2,360	2,291	2,225	6,227	6,424
Electricity, steam, water and waste management	1,007	978	949	507	492	478	1,338	1,407
Offshore wind	11,460	11,127	10,803	5,768	5,600	5,437	15,219	13,976
Construction	642	623	605	323	314	305	852	1,111
Wholesale and retail trade; repair of motor vehicles and motorcycles	4,284	4,159	4,038	2,156	2,093	2,032	5,689	5,993
Transportation and storage	1,061	1,030	1,000	534	518	503	1,409	1,568
Accommodation and food service activities	360	349	339	181	176	171	478	502
Information and communication	455	442	429	229	222	216	604	638
Financial and insurance activities	1,624	1,577	1,531	817	794	771	2,157	2,278
Real estate and ownership of dwellings	1,704	1,655	1,607	858	833	809	2,263	2,397
Professional and business services	1,286	1,248	1,212	647	628	610	1,707	2,011
Public Administration and Defense; Compulsory social security	569	552	536	286	278	270	756	796
Education	1,299	1,261	1,225	654	635	616	1,725	2,002
Human health and social work activities	425	412	400	214	208	202	564	594
Other services	565	549	533	284	276	268	751	791
Guimaras Strait								
Total National GDP (million PHP)	**24,967**	**24,240**	**23,534**	**22,848**	**15,528**	**15,076**	**33,716**	**32,513**
Agriculture, forestry, and fishing	2,137	2,075	2,015	1,956	1,329	1,290	2,886	2,824
Mining and quarrying	130	127	123	119	81	79	176	178
Manufacturing	3,208	3,114	3,024	2,936	1,995	1,937	4,332	4,363
Electricity, steam, water and waste management	524	509	494	480	326	317	708	733
Offshore wind	8,595	8,345	8,102	7,866	5,346	5,190	11,608	10,262
Construction	462	449	436	423	288	279	624	805
Wholesale and retail trade; repair of motor vehicles and motorcycles	2,818	2,736	2,656	2,579	1,753	1,702	3,806	3,931
Transportation and storage	1,061	1,030	1,000	971	660	641	1,433	1,559
Accommodation and food service activities	242	235	228	222	151	146	327	337
Information and communication	355	344	334	324	220	214	479	496
Financial and insurance activities	1,117	1,085	1,053	1,022	695	675	1,509	1,565
Real estate and ownership of dwellings	1,105	1,073	1,042	1,011	687	667	1,492	1,554
Professional and business services	953	925	898	872	592	575	1,286	1,532
Public Administration and Defense; Compulsory social security	440	427	414	402	273	265	594	612
Education	946	919	892	866	588	571	1,278	1,477
Human health and social work activities	343	333	323	313	213	207	463	477
Other services	531	515	500	486	330	320	716	738

Appendix B - Detailed Job Creation Gap and Capability

The detailed offshore wind development workforce gap analysis for job creation in the Philippines is discussed below in phases.

Table B.0.1

Development phase workforce gap analysis

Job Area	Project Development	Site selection and feasibility study	Permit and consent	Tender and bid
Skill set	• Offshore wind market and policy study • Offshore wind project management • Data analysis • International cooperation	• Environmental and social feasibility studies • Offshore wind development constraint identification and planning • Wind resources expert • GIS expert	• Local regulations and consent expertise • Development requirements expertise	• Offshore wind development • Bid and tender rules • Legal procedure
Workforce status level	Some capability	Limited capability	Some capability	Some capability
Status Description	Some talents have experience with energy infrastructure projects (e.g., onshore wind, LNG) or international cooperation experience, but no direct experience in Offshore Wind. The talent transition from existing energy industry skills to other sectors is needed through additional training programmes.	There is limited relevant experience among local professionals who understand the factors and requirements of offshore wind development, especially in marine and biodiversity criteria.	Talents may have experience related to other renewable energy, ports, coastal or marine project development and study.	As of now, there have been no offshore wind tenders or bids in the Philippines. The rules governing such processes remain unclear, and the workforce is currently limited and awaiting formation.
Gap	Moderate	Moderate	Moderate	Moderate

Job Area	Site investigation	Environmental & social impact assessment	Finance
Skill set	• Oceanography, meteorology experts • Geophysics and geotechnical experts • Survey equipment/vessel operators	• Environmental engineers • Ecologists, ornithologists, marine biologists, etc. • Survey operators	• Project Finance feasibility studies experts
Workforce status level	Limited capability	Some capability	Some capability
Status Description	The site investigation campaigns conducted in the Philippines are mostly for ports and reclamation projects. The locals have limited experience in executing investigations, especially metocean and geotechnical, for offshore structures in alignment with international best practices as only one offshore platform—Malampaya—has been constructed in the Philippines.	While there is local experience from other energy infrastructure projects, the Environmental Impact Assessment (EIA) capability specifically for offshore wind still requires further development.	While there is experience in infrastructure project finance among local talent, they may be unfamiliar with offshore wind specifically.
Gap	Moderate	Moderate	Moderate

Table B.0.2

Pre-construction workforce gap analysis

Job Area	Detailed engineering design	Procurement and contract	Construction / EPCI planning
Skill set	• Civil Engineering (mainly offshore hydraulic, structural, and geotechnical engineering) • Mechanical Engineering • Electrical Engineering • Marine Engineering • Grid and cable engineering	• Procurement strategy and management • Contract negotiation and management	• Engineering management • Project management
Workforce status level	No capability	Some capability	Limited capability
Status Description	There is currently no local experience in detailed technical and engineering design specifically for offshore wind projects, and professional education and training in these fields are not well-covered.	There is no local experience in offshore wind packages procurement, but talent can potentially be transferred from other fields. The professionals needed could be cultivated with adequate training and investment.	There are no local Engineering, Procurement, Construction, and Installation (EPCI) companies with offshore wind experience in the Philippines. The country's experience in large offshore construction projects is extremely limited—only one offshore platform—Malampaya—has been constructed in the Philippines. Reliance on foreign developers or consultants will likely be necessary.
Gap	Severe	Moderate	Severe

Job Area	Project finance and insurance	Permit and consent
Skill set	• Financial modelling • Project Finance engagement • Insurance planning	• Construction permitting and consents
Workforce status level	Limited capability	Some capability
Status Description	Offshore project finance may present more complexities compared to other infrastructure project financial models. Currently, no financial institutions in the Philippines have relevant experience in this regard.	Possibility for the transition of professionals with other construction permits and consent experience to support offshore wind projects.
Gap	Severe	Moderate

Table B.0.3

Construction workforce gap analysis

Job Area	Project management and coordination	EPCI management	Tower Manufacturing
Skill set	• Offshore wind project management • Construction management	• Construction management (EPCI) • Offshore wind farm engineering • Quality control • Construction coordinator	• Engineering design • Structure technician • Machinery technician • Coating and welding expert
Workforce status level	Limited capability	Limited capability	No capability
Status Description	While there is local experience in the management of large-scale infrastructure construction, there remains a lack of talent with OFW-specific experience and expertise. Further training is needed to cultivate talent in this area.	The Philippines lacks offshore wind-specific Engineering, Procurement, Construction, and Installation (EPCI) experience. Transitioning professionals from other industry fields will be necessary to fill this gap.	While the steel industry may offer some potential for occupational transition, tower manufacturing requires WTG (Wind Turbine Generator) supplier certification, posing challenges for short-term transitions and cultivation.
Gap	Moderate	Moderate	Severe

Job Area	Foundation fabrication (Primary steel)	Foundation component fabrication (Tier 2)	Foundation logistics and installation
Skill set	• Shop drawing engineering • Fabrication management and quality management of offshore structure • Assembly planning, dimension control and measurement • Machinery technician • Welding operation and inspection • Coating operation and inspection	• Fabrication management and quality management of offshore structure • Machinery technician • Welding operation and inspection	• Sea-fastening engineering • Jack-up engineering and operation • Dynamic positioning operation • Other working vessel operation • Offshore crane operation • Machinery technician • Logistic management • Onsite coordinator
Workforce status level	Some capability	Some capability	No capability
Status Description	The booming shipbuilding industry in the Philippines lays a good foundation for offshore wind foundation manufacturing. However, it will take some time for engineers to learn fabrication management of tubular components as it involves complicated assembly planning and measurement, especially for jacket foundations. In terms of welding, engineers, inspectors, and welders need further training as foundation manufacturing involves greater steel thickness and various welding positions. The coating technology of shipbuilding is more complicated than that of foundation manufacturing. Therefore, it is expected that coating operators and inspectors in the shipbuilding industry can easily transfer to foundation manufacturing.	Tier-2 component manufacturing is simpler than Tier-1 foundation fabrication. However, the workforce for onshore steel structures needs training in offshore structure manufacturing and quality management, such as welding process design/management and pre-heat/post-heat treatment, to meet the requirements of offshore structures. The existing industry has the workforce for relevant component manufacturing, but it may need further talent cultivation to meet the demand of a 1 GW project.	There is a lack of relevant experience in the Philippines, and while overseas workers may have some experience, the needed technicians and engineers are severely lacking. Foundation installation involves jack-up (jack-up vessel), dynamic positioning (heavy lifting vessel), and offshore crane operation technology and thus requires special training on the installation crew. Local lifting contractors, such as AAI Project Logistics and Royal Cargo, and lifting engineering consultancies, such as MOF Company (Subic) Inc., have the potential to support foundation logistics. However, the capacities should be expanded to meet the increasing offshore wind demand.
Gap	Moderate	Moderate	Severe

Table B.0.3 continued

Construction workforce gap analysis

Job Area	WTG manufacturing and assembly	WTG components manufacturing (Tier 2)	WTG logistics and installation
Skill set	• Machinery technician • Electrical engineer • Electronics technician	• High voltage electrical engineering • Cooling engineering • Electronics engineering • High voltage testing laboratory operation • Machinery technician	• WTG installation management • Sea-fastening engineering • Jack-up engineering and operation • Offshore crane operation • Machinery technician • Logistic management • Onsite coordinator
Workforce status level	No capability	Limited capability	Limited capability
Status Description	There is no turbine generator manufacturing experience in the Philippines, resulting in the absence of a workforce pool in this area. Meeting the qualifications required by main Wind Turbine Generator (WTG) suppliers may pose significant challenges for technicians and workers.	Currently, electrical component suppliers in the Philippines only manufacture low voltage (LV)/medium voltage (MV) equipment. It is challenging for engineers to overcome technical issues in high-voltage equipment, especially insulation requirements, without support of international manufacturers. Local suppliers also have to build and operate high voltage testing laboratories for certification. Some LV/MV components will be installed in WTG but require unique cooling system engineering because of the limited space for equipment in WTG. Filipino engineers are unlikely to cross the gap without the support of Tier-1 WTG suppliers.	There is no relevant experience in the Philippines. For operators, WTG installation involves jack-up (jack-up vessel) and offshore crane operation technology and thus requires special training. Filipino technicians with experience in onshore wind or infrastructure construction, although their number may be limited, can support the WTG installation team after receiving appropriate training, such as safety training offered by the Global Wind Organization (GWO). Local lifting contractors, such as AAI Project Logistics and Royal Cargo, and lifting engineering consultancies, such as MOF Company (Subic) Inc., have the potential to support WTG logistics. However, the capacities should be expanded to meet the increasing offshore wind demand.
Gap	Severe	Severe	Severe

Job Area	Blade manufacturing	Blade material supply (Tier 2)	Offshore substation EPCI
Skill set	• Product engineer • Chemical engineer • Machinery technician • Coating expert	• Chemical engineer • Materials engineer • Machinery technician	• Construction management • Electrical engineer • Electronics technician • Civil engineer • Coordinator
Workforce status level	Limited capability	Limited capability	Limited capability
Status Description	There is a limited workforce with relevant experience from other local industries, but it is highly unlikely that these resources will meet the needs.	There is a limited workforce with relevant experience from other local industries, but it is highly unlikely that these resources will meet the needs of the offshore wind industry without additional capacity building.	Although there is electrical and electronics workforce, the technical requirement of offshore substations is challenging and may not be met by existing resources and experiences.
Gap	Severe	Severe	Severe

Table B.0.3 continued

Construction workforce gap analysis

Job Area	Offshore substation topside components manufacturing (Tier 2)	Onshore substation EPC	Onshore substation components manufacturing (Tier 2)
Skill set	• Electrical engineer • Electronics technician • Machinery technician	• Construction management • Electrical engineer • Electronics technician • Civil engineer • Coordinator	• High voltage electrical engineering • Electronics engineering • High voltage testing laboratory operation • Machinery technician
Workforce status level	No capability	Fully Capable	Limited capability
Status Description	The heavy electric industry is limited in the Philippines, resulting in a constrained workforce capacity. Currently, electrical component suppliers in the Philippines only manufacture low voltage (LV)/medium voltage (MV) equipment. It is challenging for engineers to overcome technical issues in high-voltage equipment, especially insulation requirements, without support of international manufacturers. Local suppliers also have to build and operate high-voltage testing laboratories for certification.	The existing onshore substation EPC industries are likely to share some capacity for onshore substation construction, while some additional training and cultivation will be needed to ensure successful development.	Contractors imported high voltage (HV) components for previous onshore substation projects in the Philippines. Currently, electrical component suppliers in the Philippines only manufacture low voltage (LV)/medium voltage (MV) equipment. It is challenging for engineers to overcome technical issues in HV equipment, especially insulation requirements, without support of international manufacturers. Local suppliers also have to build and operate an HV testing laboratory for certification.
Gap	Severe	Mild	Severe

Job Area	Onshore overhead transmission line (OHTL) manufacturing	Onshore OHTL installation	Onshore cable manufacturing
Skill set	• High voltage electrical engineering • High voltage testing laboratory operation • Machinery technician	• Civil engineer • Earthwork • Electrical installation technician	• Product engineering • Machinery technician • Electronic technician
Workforce status level	Fully Capable	Fully Capable	Some capability
Status Description	Onshore overhead transmission line (OHTL) is a mature industry in the Philippines, and the Filipino workforce is expected to have sufficient capability to support offshore wind projects.	Onshore overhead transmission line (OHTL) is a mature industry in the Philippines, and the Filipino workforce is expected to have sufficient capability to support offshore wind projects.	There are existing companies for cable manufacturing, but the need may not fully meet offshore wind development needs. Currently, cable suppliers in the Philippines only manufacture low voltage (LV)/medium voltage (MV) cables. It is challenging for engineers to overcome technical issues in HV cables, especially insulation requirements, without support of international manufacturers. Local suppliers also have to build and operate an HV testing laboratory for certification.
Gap	Mild	Mild	Moderate

Table B.0.3 continued

Construction workforce gap analysis

Job Area	Onshore cable laying	Subsea cable manufacturing	Subsea cable laying
Skill set	• Civil engineer • Earthwork • Electrical installation technician	• Product engineer • Machinery technician • Electronic technician	• Civil engineering • Marine engineering • Working vessel operation
Workforce status level	Some capability	No capability	No capability
Status Description	There is some local experience, but the existing capacity may not meet the offshore wind development needs.	Technical requirements for subsea cable installation are higher compared to onshore grid projects, creating an entry barrier for the workforce attempting to transition directly from other existing industries.	There is no relevant experience in the Philippines, and the offshore construction-related workforce is limited.
Gap	Moderate	Severe	Severe

Job Area	Onshore logistics	Other vessel service	Environmental monitoring
Skill set	• Logistics management • Drivers	• Vessel operation and management • Mariner	• Environmental engineer • Ecologist • Survey operator
Workforce status level	Adequate	Some capability	Some capability
Status Description	The onshore transportation needs depend on the local content level, but the existing capacity is likely to provide adequate supply.	There are multiple vessel needs during offshore wind construction, and the Philippines' mariners (including the overseas workers) are likely to meet the needs in the short term.	The workforce need is relatively small but further cultivation and development is needed.
Gap	Mild	Mild	Moderate

Job Area	Stakeholder management	HSE management	Project quality control and certification management
Skill set	• Public relationship management • Coordinator and negotiator	• HSE expert	• Quality control • Project certificate
Workforce status level	Adequate	Some capability	Limited capability
Status Description	The workforce can be transferred from other industries. However, understanding of offshore wind issues may be the main barrier, so training may be needed.	The workforce can be transferred from other industries. However, the training in understanding of offshore wind issues may need some investment.	There is no local experience for offshore wind project qualification and certification in the Philippines, the involvement of foreign experts and training is needed.
Gap	Mild	Moderate	Severe

Job Area	Legal and contract management
Skill set	• Lawyer • Commercial legal • Contract management
Workforce status level	Some capability
Status Description	The legal background exists in the Philippines, but talent lacks associated experience for offshore wind projects, meaning need training and investment are likely needed.
Gap	Moderate

Table B.0.4

O&M phase workforce gap analysis

Job Area	Plant management	Wind farm operation	Turbine maintenance
Skill set	• Business management • Power technician • Administration	• Wind farm performance monitoring • Marine coordinator • Data analysis • Network engineer • HSE	• WTG maintenance technician
Workforce status level	Some capability	Some capability	Limited capability
Status Description	The daily management of offshore wind plants requires a relatively smaller workforce. Existing power plant personnel can potentially support this workforce, but they may require training for offshore wind farm operation management.	Some professionals and technicians can potentially transfer from onshore wind and other renewable sectors to support offshore wind projects in this area. However, marine, and WTG-related works likely require additional training to meet the expected needs.	Onshore wind projects may offer technicians who can be trained for offshore wind Operations and Maintenance (O&M) roles. However, the disparity between onshore and offshore wind projects contributes to the limited availability of the workforce in the Philippines. The onshore wind sector is not big enough, either.
Gap	Mild	Moderate	Moderate

Job Area	Structural inspection and maintenance	Vessel service and logistics
Skill set	• Structure engineer • Inspection technician	• Vessel operation • Coordinator
Workforce status level	Limited capability	Some capability
Status Description	The local workforce lacks experience in offshore wind structure inspection While there may be potential individuals who can support this work, training is necessary to develop the required skills and expertise.	The vessels required for the Operations and Maintenance (O&M) phase mainly involve the transportation of technicians. The development barrier is relatively lower, and the other vessel service workforce is likely to cover the demand with proper upgrades to operational conduct, facilities, and ports.
Gap	Moderate	Mild

Table B.0.5

Decommission phase workforce gap analysis

Job Area	Project management and coordinator	Feasibility study	Decommission work
Skill set	• Project management coordinator	• Offshore wind decommission engineer	• Demolition engineer • Marine engineer • Working vessel operator
Workforce status level	Limited capability	Limited capability	Some capability
Status Description	There is limited global offshore wind farm decommission experience and no experience in the Philippines. It is challenging to assess the workforce now, but global lessons learned will be crucial for the Philippines in the future.	The local workforce lacks experience in offshore wind decommissioning. International support and cooperation may be necessary.	The local workforce lacks experience in offshore wind decommissioning. International support and cooperation may be necessary.
Gap	Severe	Severe	Severe

Job Area	Permit and consent
Skill set	• Regulation and policy • International standards
Workforce status level	Some capability
Status Description	Transitioning professionals with experience in construction permits and consents could be a viable strategy to meet this need.
Gap	Moderate

Appendix C
Summary of Key Stakeholder Engagement Interviews

Note on method. This subsection synthesises themes, direct observations, and recommended actions drawn from the Key Informant Interviews (KIIs). Wherever KIIs contained direct quotes, strong consensus or repeated examples, those were used to form the findings and recommendations below.

Stakeholders interviewed comprised of the following:

Type of Respondent	Count
Provincial Local Government Unit	3
Municipal Local Government Unit	4
Regional Government Agency	1
Local Chamber of Commerce	2
Civil Society Organisation (CSO)	1
Fisherfolk Association	9
OFW Developers	1

1. Executive summary (KII-based)

KIIs from LGUs, BFAR, fisherfolk associations, CSOs, chambers of commerce, OFW developer, and other stakeholders show that benefit-sharing for coastal projects in the study area is currently fragmented (CSR, ad-hoc community funds, occasional compensation agreements and infrastructure grants). These deliver some value but fall short on transparency, enforceability, and alignment with labor market realities. OFW developer confirms intent to use local manpower and local ports where feasible but also flags significant constraints—international sourcing of key components, limited local supplier capacity, and the need for third-party vetting for bankability. Communities and LGUs want binding, verifiable commitments (local hiring, compensated fisheries co-use, demand-driven training, and multi-stakeholder governance).

2. Existing benefit-sharing practices documented in the KIIs

KIIs describe five main types of mechanisms currently used or expected in the Philippine coastal/energy context:

Community development funds/foundations

- Typically established by developers or companies; governed by a board that often includes company representatives and one or two community or LGU members.
- Perceived strengths: predictable source of small-scale community investments (e.g., livelihood grants, small infrastructure).
- Perceived weaknesses: limited transparency in fund allocation, lack of multi-stakeholder governance, and insufficient alignment with local priorities (KIIs frequently noted top-down project selection).

Corporate Social Responsibility (CSR) initiatives

- Shorter-term programmes, often branded and project-specific (scholarships, boats, clinics).
- Seen as useful for visibility and quick wins, but KIIs flagged CSR as episodic and insufficient as a replacement for durable benefit-sharing.
- Fisheries co-use compensation agreements
- Range from one-off cash payments to negotiated periodic compensation, spatial restrictions, and exchange of gear or alternative livelihoods.
- KIIs showed frustration with unclear valuation methods, delayed payments, and lack of independent oversight.
- Electrification / infrastructure support programmes
- Projects commonly invest in local electrification, schools, or roads as part of offsets or community benefit packages.
- Communities appreciate infrastructure but reported uneven geographic targeting and insufficient maintenance provisions.
- Valued by LGUs; needs maintenance and clear targeting. OFW developer specifically signals intent to use local ports in construction and sees ports as a potential anchor benefit.

Local hiring agreements and skills development partnerships

- Formal local hiring clauses were rare; more common were informal promises with few enforcement mechanisms.
- Where training partnerships exist, KIIs reported weak linkages to actual job recruitment and mismatch between training content and employer expectations.
- OFW developer indicates plans to source Filipino manpower and to work with TESDA/SUCs/private providers for upskilling, but MSME engagement is still preliminary. Training, certification and guaranteed placement pathways are repeatedly requested by communities and LGUs.

3. **Governance, funding structure, participation, and perceived effectiveness (KII themes)**
   From KIIs, four governance themes emerged:

   1. **Governance concentration:** Most funds and CSR programmes are controlled by developer/contractor interests with limited, token community representation. This reduces trust and perceived legitimacy.
   2. **Opaque funding rules:** KIIs repeatedly emphasised unclear eligibility, selection criteria, and absence of publicly available disbursement reports.
   3. **Participation gaps:** Community consultations are often ex-post (after plans formed) or perfunctory. Fisherfolk representatives, women's groups, and youth organisations reported limited meaningful engagement.
   4. **Effectiveness tied to enforceability:** Where benefit-sharing arrangements are contractually linked to project milestones (e.g., local hire % tied to payment releases), KIIs reported better follow-through. Voluntary commitments were less reliable.

4. **OFW job lifecycle — job types and local access assessment**

Using KII inputs (community perspectives, LGU comments, and civil society observations), the OFW project lifecycle was mapped and assessed for local access prospects.

Lifecycle stages and typical job types

Pre-construction/Planning

- Jobs: community liaison officers, baseline survey assistants, support staff, local site scouts.
- Local access: High — roles often filled locally if outreach is intentional.

Construction

- Jobs: onshore civil works, port upgrades, cable laying support, vessel crewing (maritime technicians), general labor, catering/logistics.
- Local access: Moderate for general labor, low for specialised marine construction and turbine installation (high skills/certification required).

Operation & Maintenance (O&M)

- Jobs: turbine technicians, control room operators, maintenance crew, environmental monitoring, port/supply operations.
- Local access: Low to Moderate — typically requires technical training, certifications, and sometimes mobility to offshore platforms.

Supply chain/Services

- Jobs: catering, cleaning, security, small-scale suppliers (fish/salvage), transportation, parts assembly.
- Local access: High for small service providers; Moderate for suppliers that can meet procurement standards.

Decommissioning

- Jobs: similar to construction; temporary demand for labor and specialised contractors.
- Local access: Moderate if capacity building occurs earlier.

Barriers to local access (KII-identified)

- Skills & certification gaps: Technical jobs require formal certifications and specialised training seldom available locally.
- Informal sector status of fisherfolk: Lack of formal employment history or certifications reduces competitiveness for hiring systems that look for documented experience.
- Mobility & logistics: Commuting constraints, lack of transport/ affordable lodging near worksites.
- Gender norms & care responsibilities: Women cited childcare and social norms as constraints to participating in shift work or long-hours roles.

- Information asymmetry: Communities often learn about jobs too late or through informal networks that exclude marginalised groups.
- Contracting thresholds: Local micro/small suppliers cannot meet insurance, bonding, or technical standards required by large developers.
- Certification and safety standards (offshore safety/GWO; DOLE has no specific offshore wind safety guideline yet).

5. **Training & skills programmes — current offerings and gaps**

KIIs and LGU inputs identified training programmes from TESDA, local vocational schools, NGOs, and ad hoc developer-funded upskilling. Major gaps:

- Mismatch in curricula and industry needs. Training is often generic (basic welding, electrical) but lacks OFW-specific modules (offshore health & safety, turbine electronics, marine crane operations).
- Certification pathway bottlenecks. Training does not always lead to recognised certification employers require.
- Insufficient soft skills and job placement support. Employer expectations for workplace discipline, English language, and digital literacy are often unmet.
- Limited women-focused technical training. Few programmes adapt schedules or content to encourage women's participation (e.g., flexible hours, childcare support).

6. **Opportunities for fisherfolk, women, youth, and marginalised sectors (KII insights)**

KIIs highlighted several realistic entry points:

Fisherfolk

- Opportunities: supply/logistics roles, vessel support services, sea-based monitoring, co-use compensation management roles.
- Enablers: formalisation of fishing groups, business skills training, inclusive procurement for small fish supply or boat maintenance.

Women

- Opportunities: administration, community liaison, local supply chains (food services), some technical roles with targeted training (electrical, electrification micro-grids).
- Enablers: gender-responsive training schedules, stipends, childcare during training.

Youth

- Opportunities: apprenticeships, IT/remote O&M monitoring roles, vocational training pipelines.
- Enablers: internships tied to recruitment, digital skills bootcamps.

Other marginalised groups

- Opportunities depend on dedicated access measures (quotas, reserved contracts) and support to navigate formal procurement.

7. **Consultations — community expectations and perceived equity (KII aggregated)**

   Across KIIs, common expectations included:

   - Clear, public commitments to local hiring and procurement.
   - Communities demand early, face-to-face consultations
   - Transparent community funds with multi-stakeholder oversight.
   - Timely and fair compensation for fisheries impacts.
   - Investments in training that leads to guaranteed interview opportunities.
   - Grievance mechanisms with independent oversight.
   - Perceived inequities reported:
   - Benefits clustered around barangay centers or households with existing ties to developers.
   - Vulnerable groups are frequently left out due to lack of documentation, timing conflicts, or exclusionary recruitment processes.

8. **Recommended model to strengthen community inclusion, transparency, and responsiveness**

   Below is a practical, KII-informed set of recommendations, prioritised and actionable.

   A. Governance & transparency (short- to medium-term)

   1. Institutionalise a Community Benefit Trust (CBT)
      - Establish an independently governed trust (multi-stakeholder board: developer, LGU, fisherfolk rep, women's group, independent CSO).
      - Publish annual budgets, disbursement reports, and project selection criteria.
   2. Contractualisation benefit commitments
      - Embed local hiring targets, procurement preferences, and fisheries compensation formulas within the project's legal agreements (EPC/PPAs/host community agreements). Tie developer payment milestones to compliance.
   3. Create a transparency portal
      - Public dashboard showing local hire rates, training enrollments/completions, procurement awards, and fund disbursements.
   4. Independent grievance and monitoring mechanism
      - A community-accessible grievance procedure managed by an independent third party with clear timelines for response and remedies.

B. Local hiring & procurement (operational)

1. Local Hiring Framework
   - Define realistic, stage-specific local hire targets (e.g., % of unskilled labor and % of supply contracts to local businesses), with a phased increase as capacity builds.
   - Include quota or reservation for fisherfolk households, women, and youth where feasible.
2. Procurement pathways for MSMEs
   - Simplified pre-qualification tiers (e.g., micro/small supplier lane) with technical assistance to meet insurance/bonding requirements.
   - Use pooled procurement or aggregation (cooperatives) to achieve scale.
3. Sample clause (for inclusion in contracts)

   "The Contractor shall prioritise qualified local residents for unskilled and semi-skilled positions. For skilled positions, the Contractor shall implement a local apprenticeship and fast-track certification programme that provides at least 30% of trainees guaranteed interview opportunities for relevant vacancies."

C. Skills development (programme design)

1. Demand-driven training pipeline
   - Co-design curricula with employers (developers, O&M contractors, port operators), TESDA, and local schools to ensure skills match job specs and certification pathways.
   - Establish guaranteed interview or apprenticeship placements tied to successful completion.
2. Certifications & bridge programmes
   - Fund certification exams and create short bridge programmes (basic literacy, digital skills, English for technical workplaces) to make fisherfolk and informal workers eligible.
3. Gender-responsive measures
   - Provide childcare stipends during training, flexible schedules, and targeted outreach for women.
4. Mobile training & satellite centers
   - Use mobile units to reach remote barangays; combine classroom, on-site simulated training, and placement services.

D. Fisheries co-use compensation (procedural)

1. Transparent valuation methodology
   - Use independent experts to calculate economic loss and negotiate compensation with fisherfolk representatives; publish the methodology and results.
2. Hybrid compensation model
   - Combine near-term cash compensation with longer-term investments (e.g., community cold storage, alternative livelihood grants, boat maintenance funds).
3. Co-management agreements
   - Formalise spatial co-use arrangements, seasonal access windows, and monitoring responsibilities with fisherfolk groups.

E. Grievance, monitoring & adaptive management

1. Independent grievance mechanisms
   - Barangay-accessible, with clear Service Level Agreements for acknowledgement and resolution; communities demand timely remedies and publicly posted minutes.

9. Closing / action checklist (based on KII priorities)

- Create a multi-stakeholder Community Benefit Trust with published rules and budget.
- Insert enforceable local hiring and fisheries compensation clauses into project agreements.
- Co-design (with industry) a demand-driven certification pipeline and guarantee placement interviews for certified trainees.
- Establish a public transparency portal and independent grievance mechanism.
- Implement MSME procurement pathways and specific measures for fisherfolk, women, and youth inclusion.
- Track the KPIs listed and convene quarterly community reviews.

Appendix D
Methodology Framework

The core of this assessment is the construction of a bespoke regional input-output (RIO) model. This model is specifically designed to quantify the macroeconomic impacts of the offshore wind build out scenarios in San Miguel Bay and Guimaras Strait. In regional economic analysis, the input-output (IO) framework is the standard tool for mapping inter-sectoral flows, and its application requires the compilation of a detailed RIO table.

The primary challenge in this compilation is the large data requirements. A robust model demands detailed, consistent, and up-to-date information on interregional trade flows for every sector—data that is often prohibitively expensive and time-consuming to acquire. Two primary frameworks exist to address this challenge. The first, the Interregional Input-Output (IRIO) model, represents the theoretical "gold standard." It is constructed "bottom-up" directly from surveyed trade data, treating each "industry-by-region" as a distinct sector. While this provides unparalleled accuracy, its data and resource-intensive nature render impractical for project-specific assessments of this nature.

The second framework, the Multi-Region Input-Output (MRIO) model, is a "non-survey" or "top-down" approach. This method begins with an established national IO table and disaggregates it into multiple regions. Interregional flows are not directly surveyed but are instead estimated using econometric techniques, such as Location Quotients (e.g., SLQ, CILQ, FLQ) and RAS balancing, which adjust national coefficients to approximate regional conditions.

Given this project's time and resource limitations, a full-survey IRIO model is not applicable. This study adopts the MRIO framework. This approach is the global standard for robust, non-survey regional impact analysis. It allows for the disaggregation of the national economy to the required regional level, maintaining analytical rigor while respecting the project's data and resource feasibility. The specific architecture of the MRIO model developed for this study is illustrated in Figure below.

		Region V Bicol Peninsula			**Region VI** Western Visayas			**Region R** Rest of Regions			**Region V** Bicol Peninsula	**Region VI** Western Visayas	**Region R** Rest of Regions	**Total Use**
		Sector 1	⋯	Sector n	Sector 1	⋯	Sector n	Sector 1	⋯	Sector n	Final Demand	Final Demand	Final Demand	
Region V Bicol Peninsula	Sector 1	$Z^{V,V}_{11}$	⋯	$Z^{V,V}_{1n}$	$T^{V,V1}_{11}$	⋯	$T^{V,V1}_{1n}$	$T^{V,R}_{11}$	⋯	$T^{V,R}_{1n}$	$D^{V,V}_{1}$	$D^{V,V1}_{1}$	$D^{V,R}_{1}$	U^{V}_{1}
	⋮	⋮	⋱	⋮	⋮	⋱	⋮	⋮	⋱	⋮	⋮	⋮	⋮	⋮
	Sector m	$Z^{V,V}_{m1}$	⋯	$Z^{V,V}_{mn}$	$T^{V,V1}_{m1}$	⋯	$T^{V,V1}_{mn}$	$T^{V,R}_{m1}$	⋯	$T^{V,R}_{mn}$	$D^{V,V}_{m}$	$D^{V,V1}_{m}$	$D^{V,R}_{m}$	U^{V}_{m}
Region VI Western Visayas	Sector 1	$T^{V1,V}_{11}$	⋯	$T^{V1,V}_{1n}$	$Z^{V,V1}_{11}$	⋯	$Z^{V,V1}_{1n}$	$T^{V1,R}_{11}$	⋯	$T^{V1,R}_{1n}$	$D^{V1,V}_{1}$	$D^{V1,V1}_{1}$	$D^{V1,R}_{1}$	U^{V1}_{1}
	⋮	⋮	⋱	⋮	⋮	⋱	⋮	⋮	⋱	⋮	⋮	⋮	⋮	⋮
	Sector m	$T^{V1,V}_{m1}$	⋯	$T^{V1,V}_{mn}$	$Z^{V,V1}_{m1}$	⋯	$Z^{V,V1}_{mn}$	$T^{V1,R}_{m1}$	⋯	$T^{V1,R}_{mn}$	$D^{V1,V}_{m}$	$D^{V1,V1}_{m}$	$D^{V1,R}_{m}$	U^{V1}_{m}
Region R Rest of Regions	Sector 1	$T^{R,V}_{11}$	⋯	$T^{R,V}_{1n}$	$T^{R,V1}_{11}$	⋯	$T^{R,V1}_{1n}$	$Z^{R,R}_{11}$	⋯	$Z^{R,R}_{1n}$	$D^{R,V}_{1}$	$D^{R,V1}_{1}$	$D^{R,R}_{1}$	U^{R}_{1}
	⋮	⋮	⋱	⋮	⋮	⋱	⋮	⋮	⋱	⋮	⋮	⋮	⋮	⋮
	Sector m	$T^{R,V}_{m1}$	⋯	$T^{R,V}_{mn}$	$T^{R,V1}_{m1}$	⋯	$T^{R,V1}_{mn}$	$Z^{R,R}_{m1}$	⋯	$Z^{R,R}_{mn}$	$D^{R,V}_{m}$	$D^{R,V1}_{m}$	$D^{R,R}_{m}$	U^{R}_{m}
Value Added		V^{v}_{1}	⋯	V^{v}_{n}	V^{V1}_{11}	⋯	Z^{V1}_{1n}	V^{R}_{11}	⋯	V^{R}_{n}				
Output		X^{v}_{1}	⋯	X^{v}_{n}	$X^{v,v}_{11}$	⋯	Z^{V1}_{1n}	X^{R}_{11}	⋯	X^{R}_{n}				
Imports		M^{v}_{1}	⋯	M^{v}_{n}	$M^{v,v}_{11}$	⋯	Z^{V1}_{1n}	M^{R}_{11}	⋯	M^{R}_{n}				
Total Supply		S^{v}_{1}	⋯	S^{v}_{n}	$S^{v,v}_{11}$	⋯	Z^{V1}_{1n}	S^{R}_{1}	⋯	S^{R}_{n}				

The framework of RIO

RIO Table Compilation Procedure

The construction of the MRIO table for this study follows a multi-step, non-survey methodology:

- **Regional Scope Definition:** The first step in the analysis is to define the core economic region impacted by the offshore wind farms. San Miguel Bay is located on the Bicol Peninsula (Region V), and the Guimaras Strait is located in the Western Visayas (Region VI). Given the data availability from the Philippine Statistics Authority (PSA) (e.g., GRDP, GRDE), provincial-level expenditure-side information remains lacking. Therefore, this study adopts the "Region" as the most appropriate analytical scale, constructing two core regional IO tables: Bicol Peninsula (Region V) and Western Visayas (Region VI)
- **Establish National Control Totals:** The model is anchored to the official 2018 16x16 National IO Transaction Table from the PSA. This table serves as the comprehensive control total for the entire Philippine economy, which is then disaggregated.
- **Estimate Regional Technical Coefficients:** To regionalize the national coefficients, this study adopts the Simple Location Quotient (SLQ) method. In the currently available data environment, the SLQ method is adopted for its high transparency, ease of implementation, and robustness. The SLQ will be used to adjust national technical coefficients to reflect the degree of industrial specialization in each region.
- **Data Compilation and Balancing:** We will collect regional output, value added, and final demand data for each industry from the PSA's GRDP, GRDE, and CPBI to calculate the SLQs. After the initial regional IO tables are estimated, the Biproportional Scaling Method (RAS) will be applied for balancing, ensuring that the total supply and total demand of each region are consistent and reconcile with the national control totals.
- **Estimate Employment Coefficients:** Finally, using regional employment and output data from the PSA, the employment coefficient (i.e., employment required per unit of output) for each industry will be calculated to serve as the basis for the subsequent employment impact analysis.

Appendix E
Mapping of Offshore Wind Cost Components to IO Sectors

Category	Service	IO (240 Sectors)	IO (16 Sectors)
Expenditure Period: DevEx			
Consulting and Advisory	Consulting and Advisory Service	206 Life insurance	10 Financial and insurance activities
		207 Non-life and other insurance activities	10 Financial and insurance activities
		211 Legal activities	12 Professional and business services
		212 Accounting, bookkeeping, and auditing activities; tax consultancy	12 Professional and business services
		214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
		220 Other professional, scientific, and technical activities, n.e.c.	12 Professional and business services
		222 Rental and leasing activities	12 Professional and business services
Meteorological and Oceanographic Surveying	Meteorological and Oceanographic Surveying Service	220 Other professional, scientific, and technical activities, n.e.c.	12 Professional and business services
Environmental Surveys	Environmental Impact Assessment	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
Seabed Surveys	Geophysical and Geotechnical	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Unexploded Ordnance	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
Vessels and UAV	Survey vessels	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Data gathering UAV	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
FEED	Electrical system FEED	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Foundation FEED	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Grid connection FEED	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Logistics FEED	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Vessel design FEED	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Ports FEED	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
Project Management and Execution Service	Project Management and Execution Service	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services

Category	Service	IO (240 Sectors)	IO (16 Sectors)
Expenditure Period: CapEx			
Foundations	Foundation EPCI	176 Construction	05 Construction
	Foundation EPC	121 Manufacture of cement	03 Manufacturing
		127 Manufacture of structural metal products	03 Manufacturing
	Foundation Supply Services	176 Construction	05 Construction
	Foundation Installation Services	127 Manufacture of structural metal products	03 Manufacturing
		Foundation Installation Services	03 Manufacturing
		129 Forging, pressing, stamping, and roll-forming of metal; powder metallurgy	03 Manufacturing
Floating Substructure	Substructure EPCI	176 Construction	05 Construction
	Substructure Supply Services	127 Manufacture of structural metal products	03 Manufacturing
		131 Manufacture of other fabricated metal products, n.e.c.	03 Manufacturing
Turbines	Turbine EPCI	176 Construction	05 Construction
	Turbine EPC	176 Construction	05 Construction
	Turbine Supply Services	111 Manufacture of plastics in primary forms and of synthetic rubber	03 Manufacturing
		120 Manufacture of glass and glass products	03 Manufacturing
		124 Casting/foundry of iron and steel	03 Manufacturing
		127 Manufacture of structural metal products	03 Manufacturing
		131 Manufacture of other fabricated metal products, n.e.c.	03 Manufacturing
		142 Manufacture of electric motors, generators and transformers and electric generating sets	03 Manufacturing
		147 Manufacture of other electrical equipment	03 Manufacturing
		151 Manufacture of other general purpose machinery	03 Manufacturing
		172 Electric power generation, transmission, and distribution	04 Electricity, steam, water, and waste management
Cables	Array Cable EPCI	144 Manufacture of wiring and wiring devices	05 Construction
		176 Construction	03 Manufacturing
	Export Cable EPCI	144 Manufacture of wiring and wiring devices	05 Construction
		176 Construction	03 Manufacturing
	Array Cable EPC	144 Manufacture of wiring and wiring devices	05 Construction
		176 Construction	03 Manufacturing
	Export Cable EPC	144 Manufacture of wiring and wiring devices	05 Construction
		176 Construction	03 Manufacturing
	Cable Supply Services	144 Manufacture of wiring and wiring devices	03 Manufacturing
	Cable Installation Services	176 Construction	05 Construction

Category	Service	IO (240 Sectors)	IO (16 Sectors)
Expenditure Period: CapEx			
Offshore Substations	Offshore Substation EPCI	176 Construction	05 Construction
	Offshore Substation EPC Jacket	127 Manufacture of structural metal products	03 Manufacturing
	Offshore Substation EPC Topside	127 Manufacture of structural metal products	03 Manufacturing
		142 Manufacture of electric motors, generators and transformers and electric generating sets	03 Manufacturing
	Offshore Substation Supply Services	127 Manufacture of structural metal products	03 Manufacturing
		142 Manufacture of electric motors, generators and transformers and electric generating sets	03 Manufacturing
		144 Manufacture of wiring and wiring devices	03 Manufacturing
Balance of Plant	Balance of Plant	176 Construction	05 Construction
Installation Services	Turbine EPCI	189 Support activities for transportation	07 Transportation and storage
		176 Construction	05 Construction
	Transportation and Installation Services	176 Construction	05 Construction
		185 Road freight transport	07 Transportation and storage
		186 Water transport	07 Transportation and storage
		189 Support activities for transportation	07 Transportation and storage
	Personnel and Training Services	229 Public education	14 Education
		223 Private education	14 Education

Category	Service	IO (240 Sectors)	IO (16 Sectors)
Expenditure Period: OpEx			
Onshore	Onshore EPCI	176 Construction	05 Construction
	Onshore Substation EPC	176 Construction	05 Construction
	Onshore Substation Supply Services	142 Manufacture of electric motors, generators and transformers and electric generating sets	03 Manufacturing
	Onshore Export Cable Installation Services	176 Construction	05 Construction
Operations and Maintenance	Asset Management	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Condition Monitoring	214 Architecture and engineering activities; technical testing and analysis	12 Professional and business services
	Vessel Providers OM	186 Water transport	07 Transportation and storage
	Port Services	189 Support activities for transportation	07 Transportation and storage
	Personnel and Training Services	229 Public education	07 Transportation and storage
		230 Private education	

For any questions, please contact:

Jigs Consolacion
Senior Policy Officer
jigs.consolacion@gwec.net

Pope John Sotto
Senior Policy Officer
popejohn.sotto@gwec.net

GWEC
GLOBAL WIND ENERGY COUNCIL