ESMAP
Energy Sector Management Assistance Program

WORLD BANK GROUP
THE WORLD BANK IBRD • IDA | IFC International Finance Corporation

8 October 2025

SCAN

Making Offshore Wind Work

Latin America Markets - Webinar

Credit: Vestas

Agenda

1. OPENING REMARKS

Roberta Cox

Policy Director Brazil for GWEC & COP30

Director for Global Renewables Alliance (GRA)

2. ‘MAKING OFFSHORE WIND WORK’ KEY FACTORS 2025 REPORT

Sean Whittaker, Program Lead

3. SPOTLIGHT ON BRAZIL

Carolina de Mas, ESMAP Advisor

4. SPOTLIGHT ON COLOMBIA

Clare MacGregor, ESMAP Advisor

5. Q&A

Credit: Vestas

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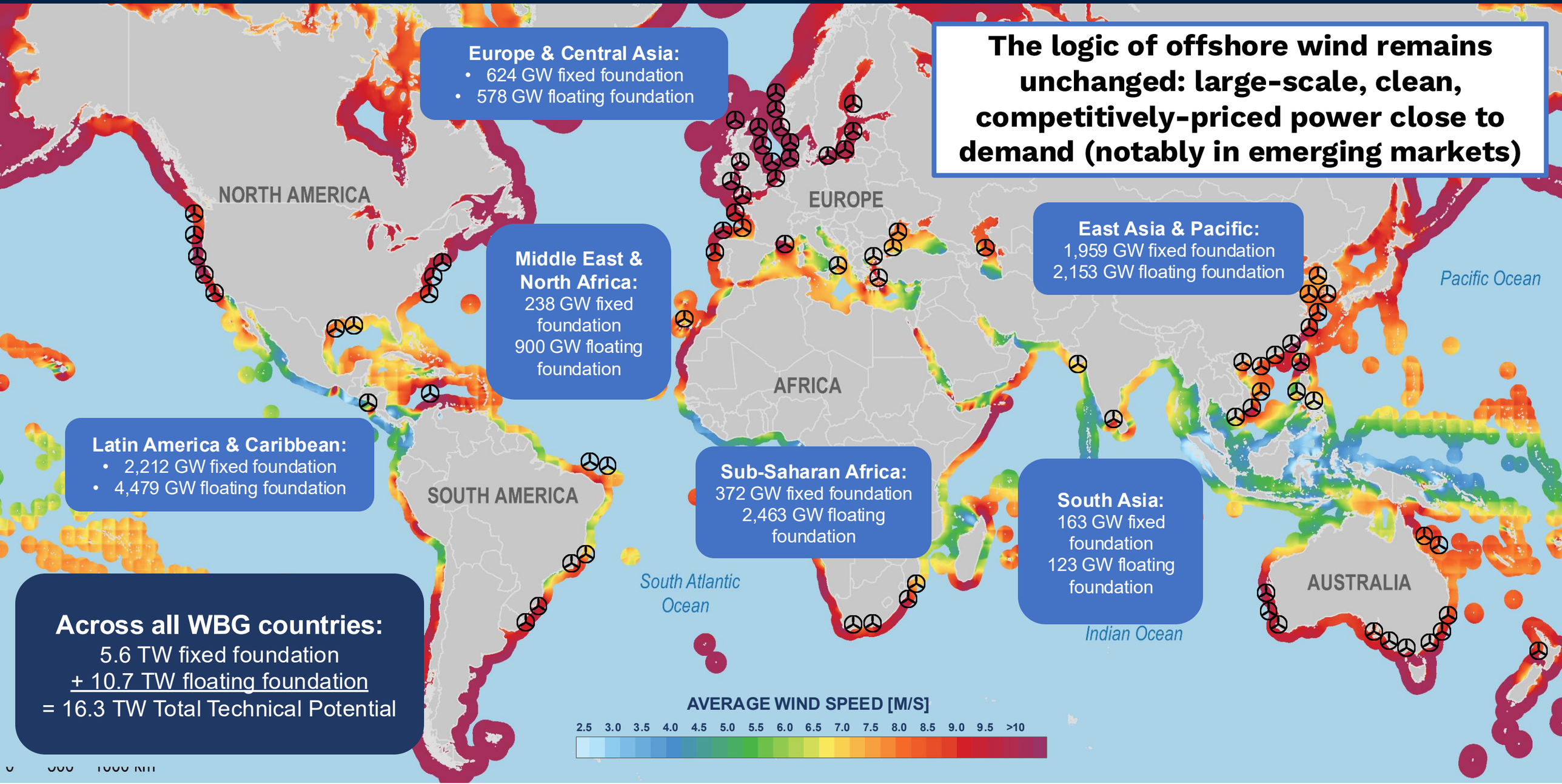
OVERVIEW: Offshore Wind Development Program

Credit: Principle Power and Ocean Winds

Offshore Wind Potential in Emerging Markets

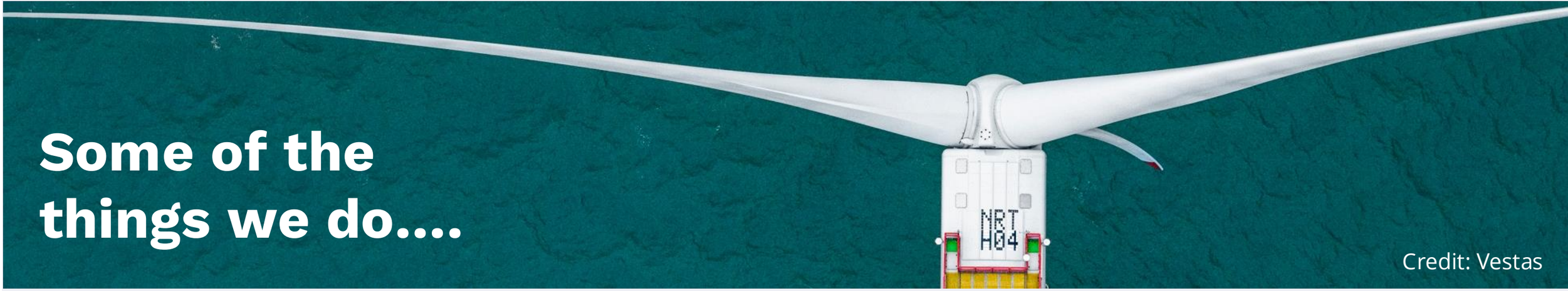


Our story so far

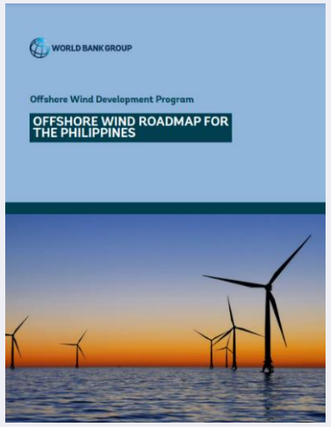
- **BACKGROUND:**
  Started in 2019, jointly managed by ESMAP (WB Trust Fund) and IFC
- **OBJECTIVE:**
  Accelerate deployment of offshore wind in emerging markets and support development of a pipeline of bankable projects
- **OUR CLIENTS:**
  Worked with 26 Emerging Market Governments with focus on eight key markets
- **COLLABORATORS & PARTNERS:**
  GWEC, GOWA, OEP, WFO, WindEurope, DEA, RVO, ADB, and many other agencies and NGOs

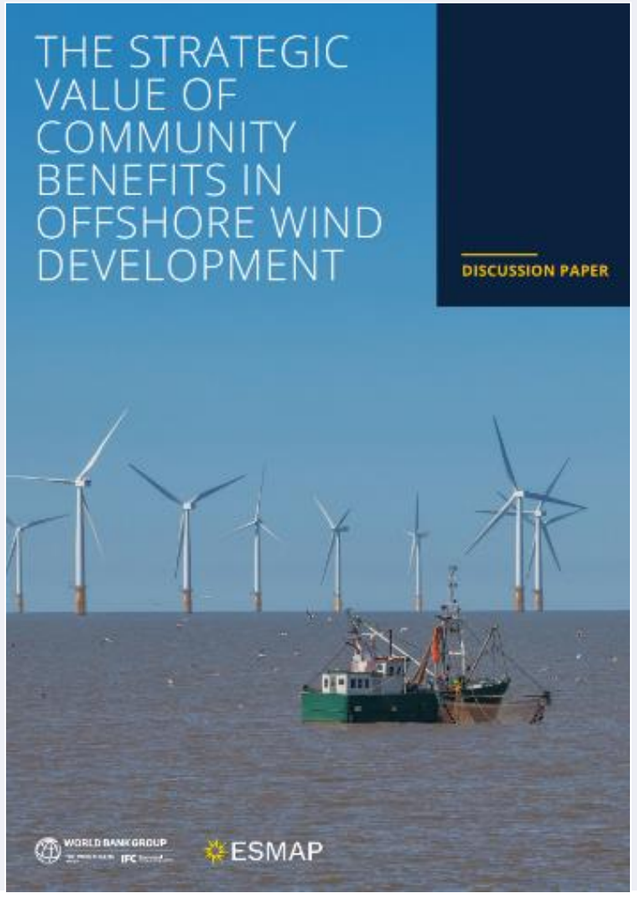

Credit: Jan de Nul

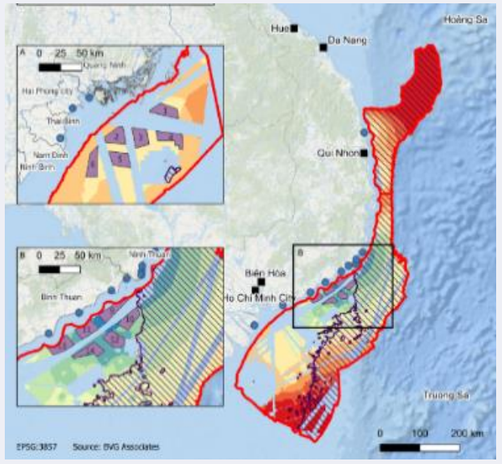
Some of the things we do....

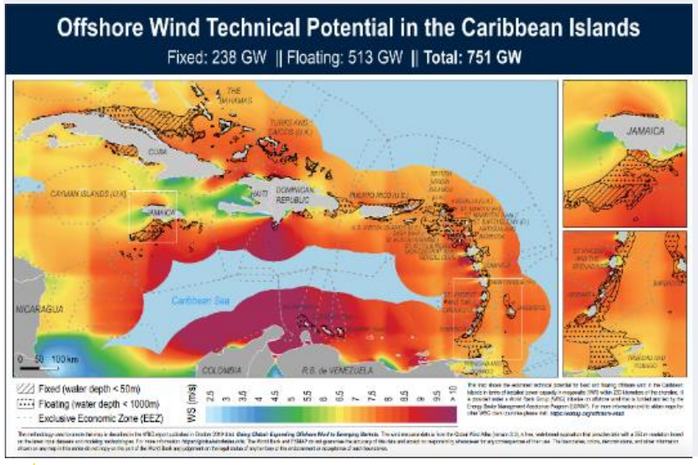


Credit: Vestas









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Program Team

WBG Staff

Sean Whittaker
Program Co-Lead (IFC/ESMAP)

Rafael Ben
Program Co-Lead (ESMAP)

Maria Arsenova
(IFC) Benefit Sharing Lead

Anna Maria Jaklitsch (IFC)
Finance

Country Leads

Chris Lloyd
Lead Advisor, South Asia, RSA (ex. Crown Estate, RWE)

Carolina de Mas
Lead Advisor LAC (ex. RCG, Orsted, Maersk)

Maya Malik
Lead Advisor Vietnam (ex. CIP, Orsted, Shell)

Naomi Campbell
Lead Advisor, Philippines (ex. Crown Estate, SSE, CIP, AECOM)

Global Support

Clare MacGregor
Finance Advisor (ex. Vattenfall)

Huub den Rooijen
Strategic Advisor (ex. Crown Estate)

Mark Leybourne
Advisor (ex-ESMAP, ITPE)

Greg Scopelitis
Finance Advisor (ex. IFC, Mizuho)

Tim Norman
E&S Advisor (ex. NIRAS, Crown Estate)

Andy Oldroyd
Advisor, Resource & Measurements

Alex Finlayson
Communications & Outreach (ex. Orsted)

Matt Barlow
Geospatial Advisor (ex. Crown Estate)

Evolution of OSW in Emerging Markets

	2019	2025
Brazil 	• Start of offshore wind roadmap • 5 GW application for permits	• OW Law passed Jan 2025 • +220 GW permit applications
Philippines 	• No OSW in energy plan • No service contracts	• GEA-5 H2 2025 focusing on OSW • 90 service contracts circa 67 GW
Vietnam 	• No OSW in energy plan • <5GW true offshore proposed	• PDP8 (+110 GW OSW by 2050) • >100 GW offshore proposed
Colombia 	• No OSW in energy plan • No OSW under development	• OSW Roadmap and Regulation • 9-18 GW by 2050; Seabed leasing
Romania 	• No OSW in energy plan • No OSW under development	• OSW Roadmap in March 2024 • OSW Law targeting 3 GW

Evolution of the Program's Support

Stage 1: Education 2019–2023

- Mapping technical potential
- Developing global resources
- Organizing study tours

Stage 2: Roadmaps 2021–2025

- Developing country roadmaps
- Engaging with decision-makers
- Setting targets and policies

Stage 3: Country Action 2024–2028

- Supporting roadmap implementation
- Facilitating data acquisition
- Financing to public & private sectors

Making Offshore Wind Work

KEY FACTORS:

- Originally released in 2021 (e-Learning course in 2022)
- Updated based on Program experience over first 5 years
- Analytical work by BVG Associates

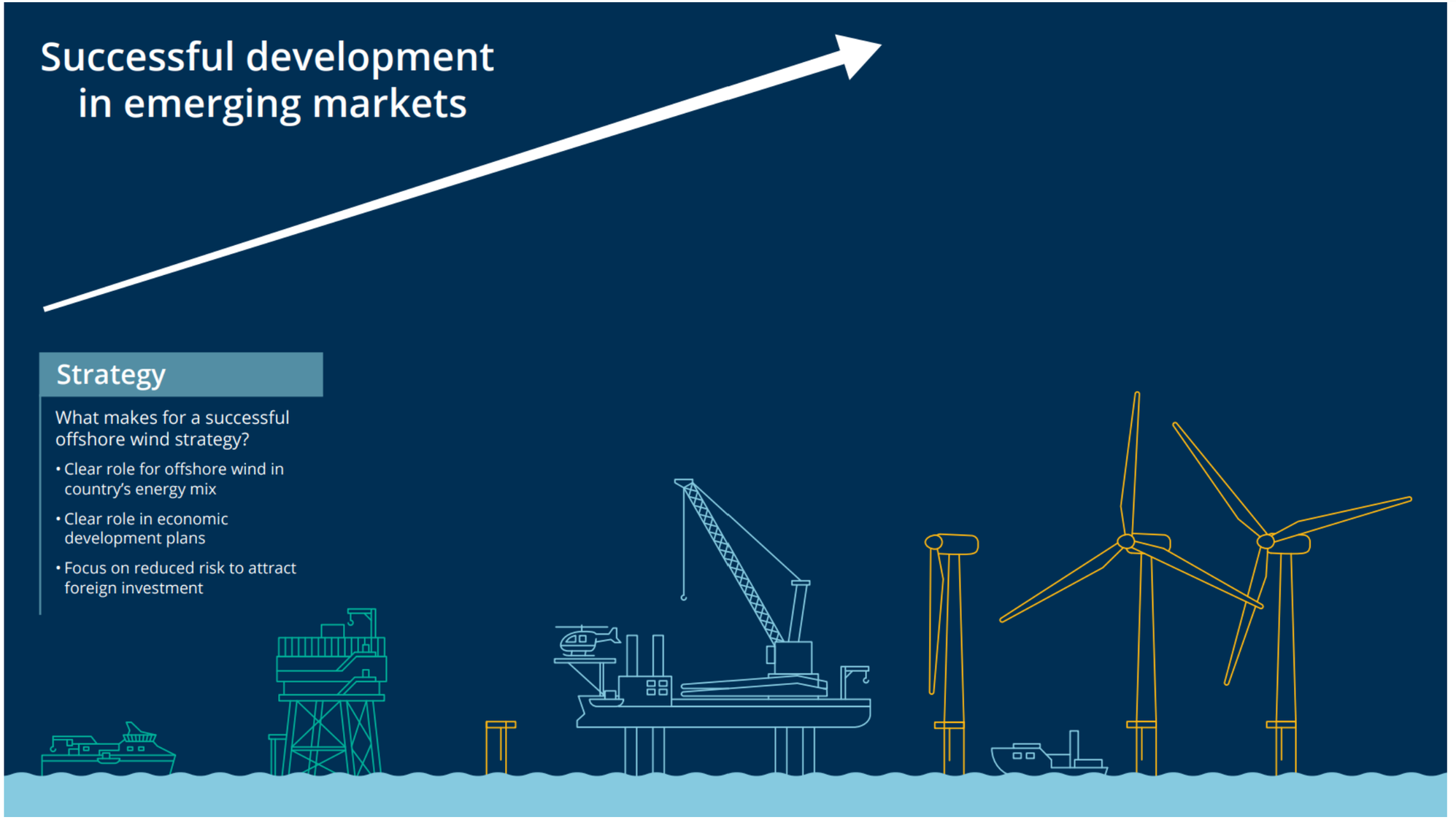
PURPOSE:

- Distil lessons from established markets
- Recommendations are *directional* rather than *prescriptive*

2025 REVISION NEW CONTENT

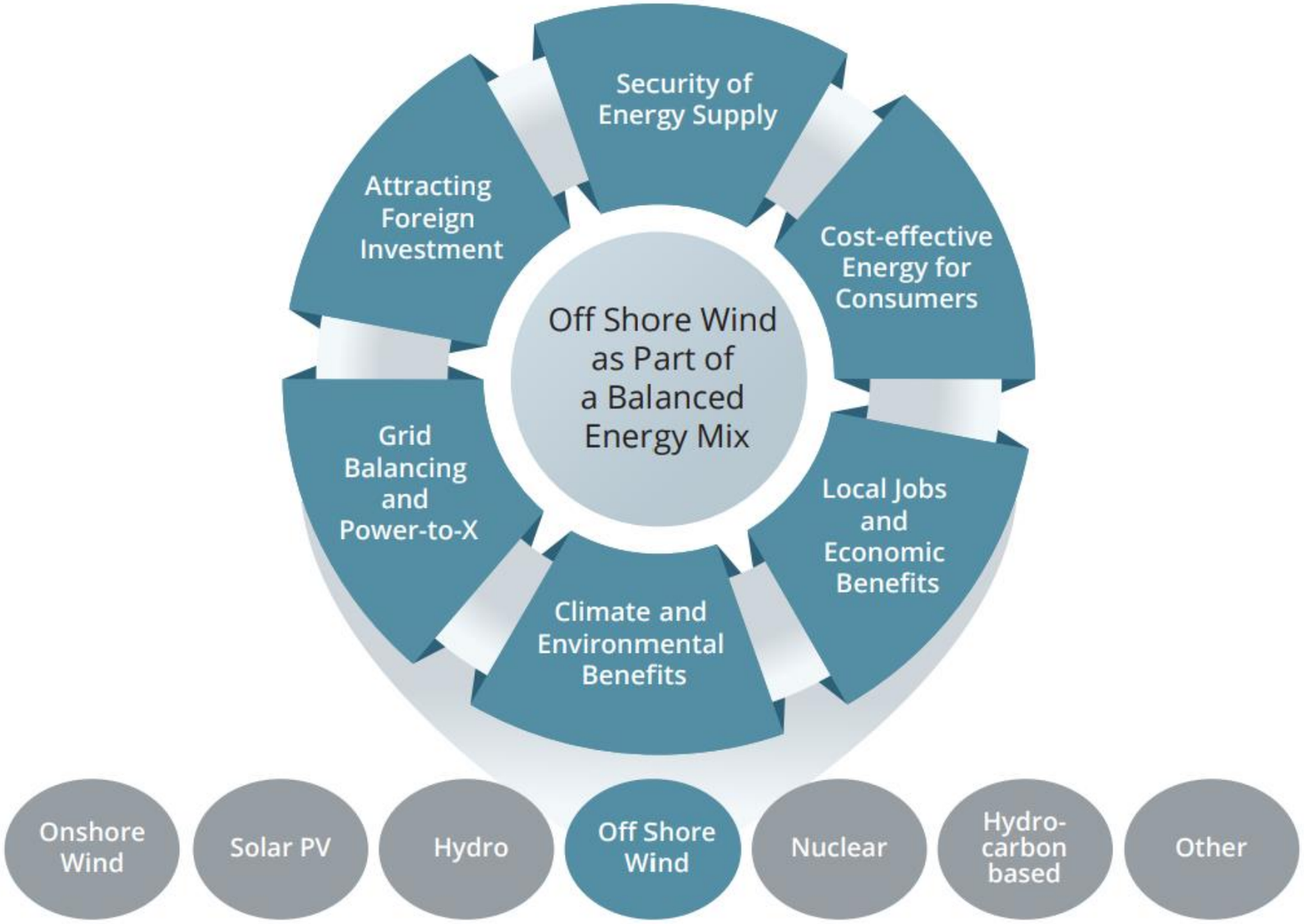
- Finance mobilization
- Marine spatial planning
- Integrated environmental & social sensitivity mapping
- Advances in technology

The Four Pillars



Pillar 1: Strategy

Key Considerations For The Development Of An Offshore Wind Strategy



Pillar 2: Policy

Key Policy Levers To Implement An Offshore Wind Strategy

2.1 Introduction

Once a high-level strategy has been established, policymakers must then look to put in place offshore wind-specific policies that will turn the strategy into reality.

2.2 Volume and Timescales

Governments should carefully consider the amount of offshore wind it seeks to enable and to the timing of the deployment of the new generation capacity.

2.3 Cost of Energy

Government policies have a significant impact on the cost of electricity from offshore wind, both in the medium-term and long-term.

2.4 Local Jobs and Economic Benefit

Offshore wind offers long-term opportunities for local jobs and economic benefits. This section links closely with supply chain development discussed in section 4.2.

2.5 Environmental and Social Sustainability

Offshore wind projects have implications for ecosystems and regional communities.

2.6 Stakeholder Engagement

Governments undertake stakeholder engagement as part of the implementation of frameworks and delivery support initiatives.

Pillar 3: Frameworks

Frameworks Required To Deliver An Offshore Wind Industry

Marine Spatial Planning

Deciding in broad terms where it is most beneficial to site offshore wind projects, taking a holistic view of marine resources, avoiding areas of high environmental and social risk.

Leasing

Giving rights to a project developer to survey a potential site, then eventually to construct and operate a wind farm.

Permitting

Providing permissions for a project developer to survey, construct, and operate a wind farm, following a robust Environmental and Social Impact Assessment (ESIA).

Offtake and Revenue

Lowering the risk of the revenue stream sufficiently to enable a final investment decision to be made by investors.

Export Systems and Grid Connection

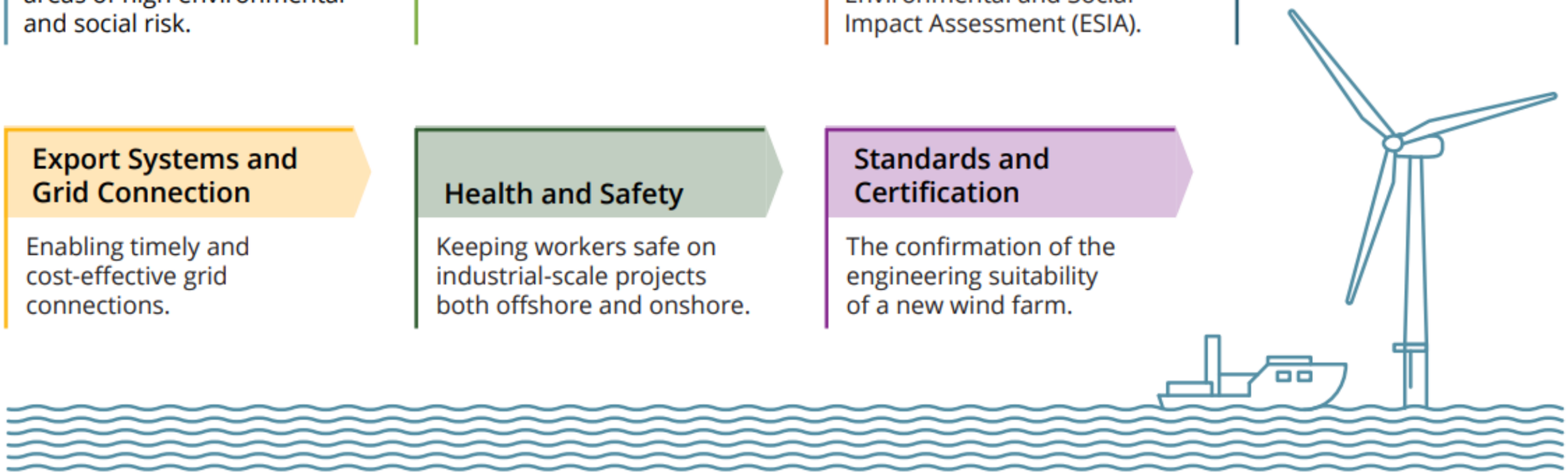
Enabling timely and cost-effective grid connections.

Health and Safety

Keeping workers safe on industrial-scale projects both offshore and onshore.

Standards and Certification

The confirmation of the engineering suitability of a new wind farm.



Pillar 4: Delivery

Key Enablers Underpinning Offshore Wind Delivery

4.1 Introduction

The frameworks discussed in chapter 3 provide the regulations and processes to give offshore wind developers a clear project development pathway.

4.2 Supply Chain

The frameworks discussed in chapter 3 provide the regulations and processes to give offshore wind developers a clear project development pathway.

4.3 Ports

Nearby ports are essential to enable the construction, operation, and maintenance of offshore wind farms.

4.4 Transmission Network

A robust approach to transmission network planning and upgrades is required to give industry confidence that projects can be connected to a sufficiently strong transmission network.

4.5 Financing

Offshore wind is a highly capital-intensive industry requiring significant participation from the banking sector and the capital markets.

4.6 Collaboration, Capability and Partnerships

The development of a successful offshore wind industry takes a collaborative approach over many years. A generic map of typical stakeholders is shown in Figure 4.

Main Messages

1. VISION AND COMMITMENT

- Offshore wind is uniquely large and complex, requiring strong government support to unlock its full potential.

2. LONG-TERM PLANNING

- Offshore wind must be clearly positioned in long-term plans, backed by firm policy targets and timelines.

3. FRAMEWORK COORDINATION

- Coordinate agencies to build clear, robust frameworks that enable bankable, internationally aligned outcomes.

4. INDUSTRY COLLABORATION

- **Collaborate** with industry to gather feedback on learning and experience, and use this **to improve** policy, frameworks, and delivery.

Credit: Ian Hastie, courtesy of AREG/Aberdeen

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October 2025

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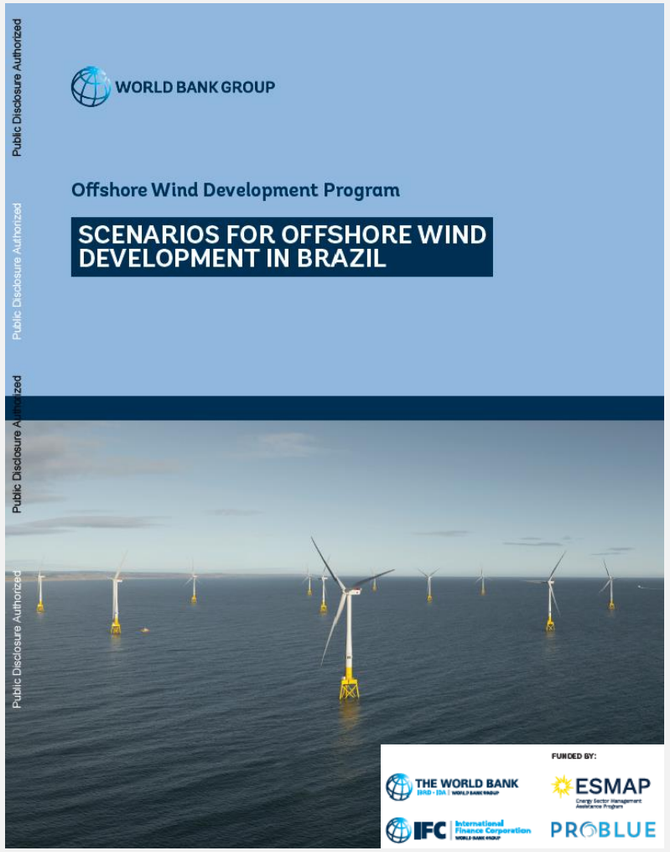
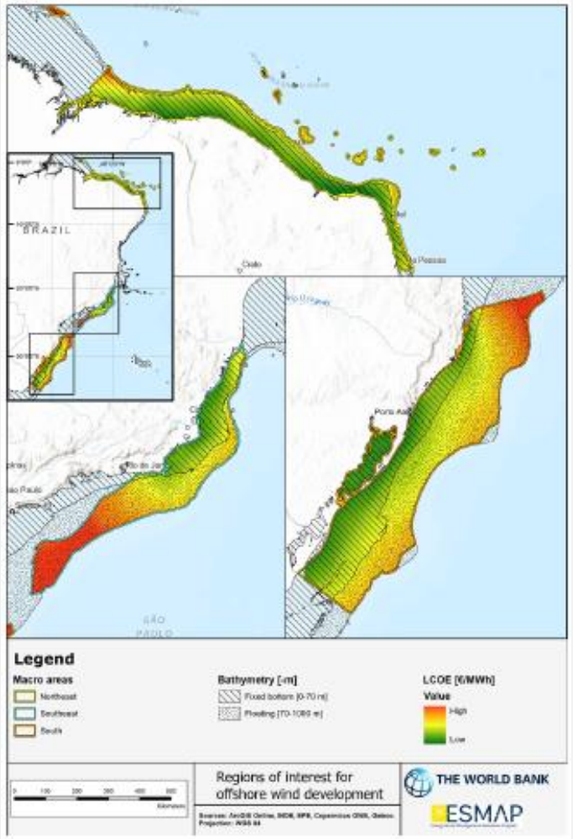
Case Studies

Credit: Ørsted

Case Study: Brazil Stages 1 and 2

2019	2020	2021	2022	2023	2024
Studies and regulations					Scenarios report
Government relationship and capacity building					





Case Study: Brazil Stage 3

Strategy

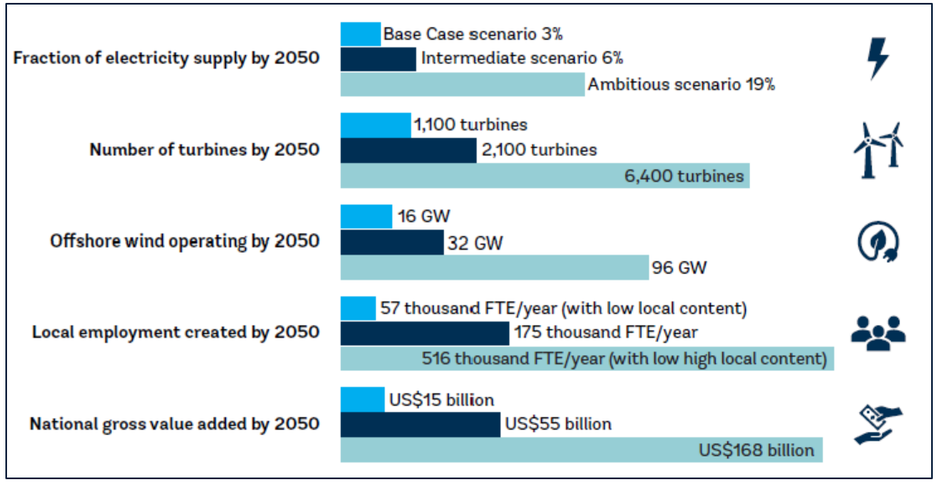
What makes for a successful offshore wind strategy?

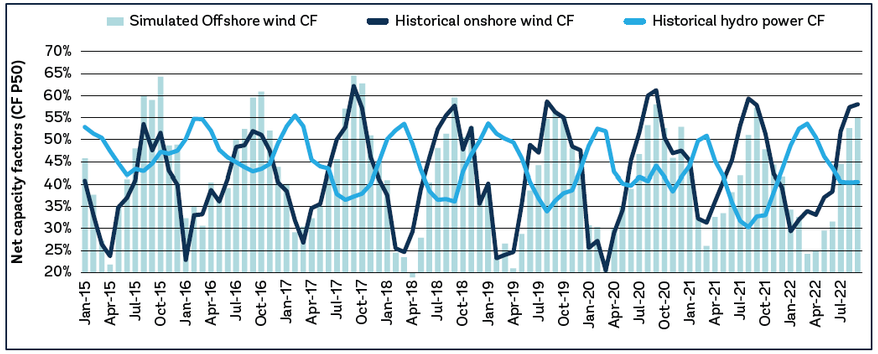
- Clear role for offshore wind in country's energy mix
- Clear role in economic development plans
- Focus on reduced risk to attract foreign investment

Visão

"A energia eólica offshore é uma fonte que se insere na estratégia do planejamento energético brasileiro, pois abre uma promissora nova fronteira para as energias limpas e renováveis, sendo um recurso abundante e disponível em diversas regiões da costa brasileira. Por isso o governo busca dar segurança jurídica para os estudos e investimentos em energia eólica offshore."

MME – Ministério de Minas e Energia





Case Study: Brazil Stage 3

Ministério de Minas e Energia
Consultoria Jurídica

LEI Nº 15.097, DE 10 DE JANEIRO DE 2025

Disciplina o aproveitamento de potencial energético *offshore*; e altera a Lei nº 9.427, de 26 de dezembro de 1996, a Lei nº 9.478, de 6 de agosto de 1997, a Lei nº 10.438, de 26 de abril de 2002, a Lei nº 14.182, de 12 de julho de 2021, e a Lei nº 14.300, de 6 de janeiro de 2022.

Policy

What policies are needed to make this strategy a reality?

- Long term, stable targets
- Strong supply chain development plans
- Policies to ensure meaningful stakeholder engagement
- Policies to drive competition and reduce costs
- Early and ongoing stakeholder engagement

GT EÓLICAS OFFSHORE

CNPE

Governo formaliza o Grupo de Trabalho para regulamentar energia eólica offshore no Brasil

Iniciativa coordenada pelo MME reunirá 23 instituições e abrirá caminho para aproveitar o potencial de 1.200 GW em geração renovável e sustentável

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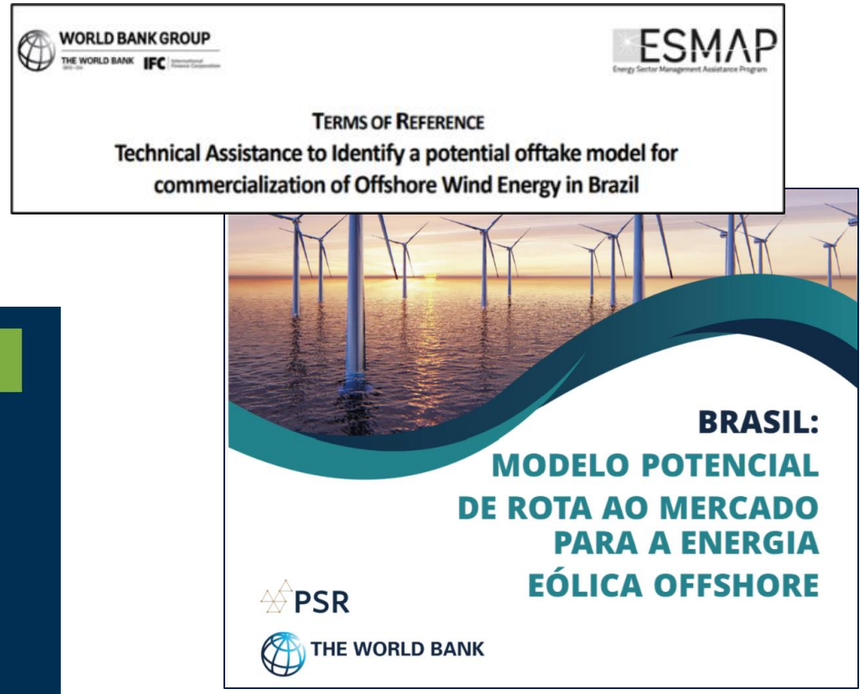
TERMS OF REFERENCE
Stakeholder Engagement Plan and Roadmap for Offshore Wind Energy in Brazil

Atualização da Metodologia de Avaliação de Partes Interessadas

Plano de Engajamento de Partes Interessadas e Roteiro para Energia Eólica Offshore no Brasil

Our experience. Your growth.

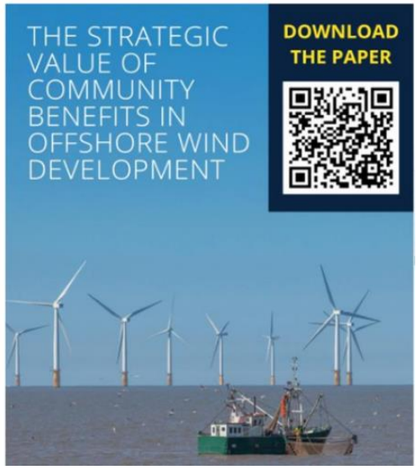
Case Study: Brazil Stage 3



Frameworks

What frameworks are needed to enact policies?

- Marine Spatial Planning
- Clear leasing process
- Clear permitting process
- Bankable offtake agreements
- Grid integration planning
- Strong H&S framework
- Internationally compatible Certification requirements
- Balanced community benefit arrangements



Portaria_Interministerial_MME/MMA_n_3·
2022

Cria o Portal Único para Gestão do Uso de Áreas Offshore para Geração de Energia (PUG-offshore).

Case Study: Colombia

OSW Technical Potential Map — 2020

Offshore Wind Roadmap launch — 2022

OSW Regulation issued — 2022

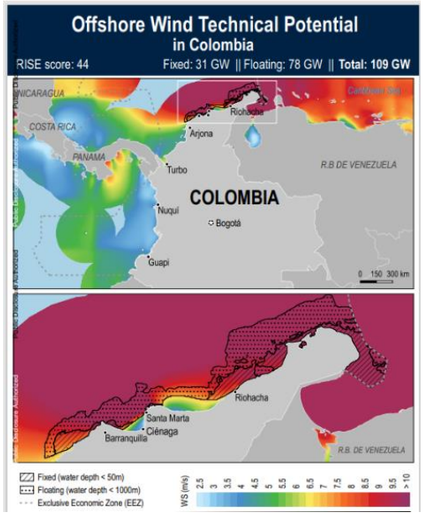
New Government — 2022

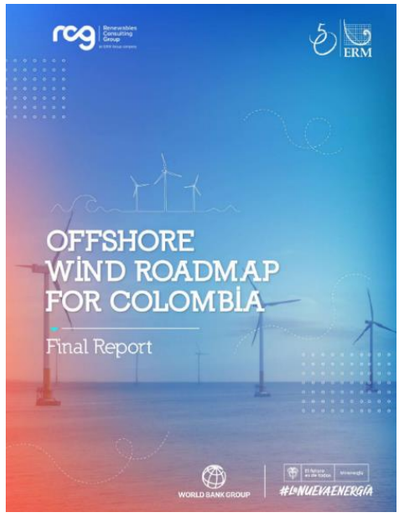
Start seabed allocation competition — 2024

8 consortiums submit PQQ — 2024

'CfD' Revenue Mechanism Resolution — 2025

2020	2021	2022	2023	2024	2025
Initiate engagement, scope out Roadmap		Capacity Building	Support to draft Resolution	Financial and market experts engaged	• Convene meetings with industry • Revenue support mechanism • Sensitivity Mapping	Supporting Government 3-year work plan • Grid • Ports • Market Modernisation • Social





- World-class wind conditions
- Desire to diversify power mix, transition offshore O&G
- Vision of up to 18 GW by 2050
- Running first seabed allocation competition for up to 3GW
- Drafting regulations for CfD mechanism for offtake
- Developing permitting process and planning infrastructure (grid & ports)

Case Study: Journey to secure leasing round

REUTERS

Colombia's first offshore wind energy auction lures global interest

ANH
AGENCIA NACIONAL DE HIDROCARBUROS
COLOMBIA

Noticias

Nueve compañías interesadas en participar en la primera 'Ronda de energía eólica costa afuera en Colombia'

Colombia on the move after choosing revenue support mechanism for offshore wind round

Colombia and Brazil are sleeping giants in terms of offshore wind potential but one of them, at least, seems to be on the move

o end Colombia's dependence on fossil fuels. (Photo:

Identification of Offshore Wind Energy Commercialization Mechanisms in Colombia – Task 3 Definition of Commercialization Mechanisms

RightSide Decision Tools

AFRY

CONSULTANCY FOR THE SIMULATION AND IMPACT ASSESSMENT OF OFFSHORE WIND ENERGY INTEGRATION INTO THE COLOMBIAN WHOLESALE ENERGY MARKET THROUGH THE CONTRACTS FOR DIFFERENCES MECHANISM

CONCLUDING REMARKS

OFFSHORE WIND GROWING QUICKLY:

- Large-scale, clean power close to demand
- Growth is now moving to emerging markets

WBG PROGRAM SUPPORT IS EVOLVING:

- “Just-in-Time” guidance to governments
- Critical given turbulence in sector

MAKING OFFSHORE WIND WORK:

- Four pillars for establishing a viable OSW sector
- Applying international practice in a local context

ALL EYES ARE ON LAC:

- Brazil and Colombia are at the vanguard of offshore wind in emerging markets
- Next 12 months will be critical

Credit: Jan de Nul

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MAKING OFFSHORE WIND WORK: Key Factors for Successful Development of Offshore Wind in Emerging Markets

SCAN

Q&A

Credit: Principle Power and Ocean Winds