

# Realizing maximum long term sustainable benefits for Provinces from offshore wind

Giang Nguyen – Head of Business Development

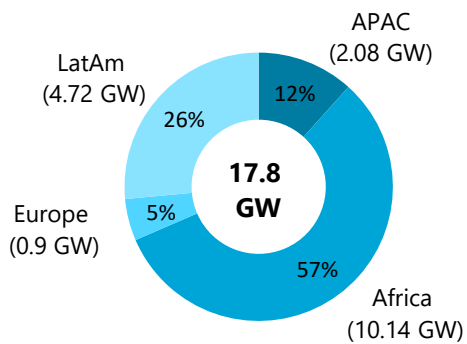


# Global Pipeline

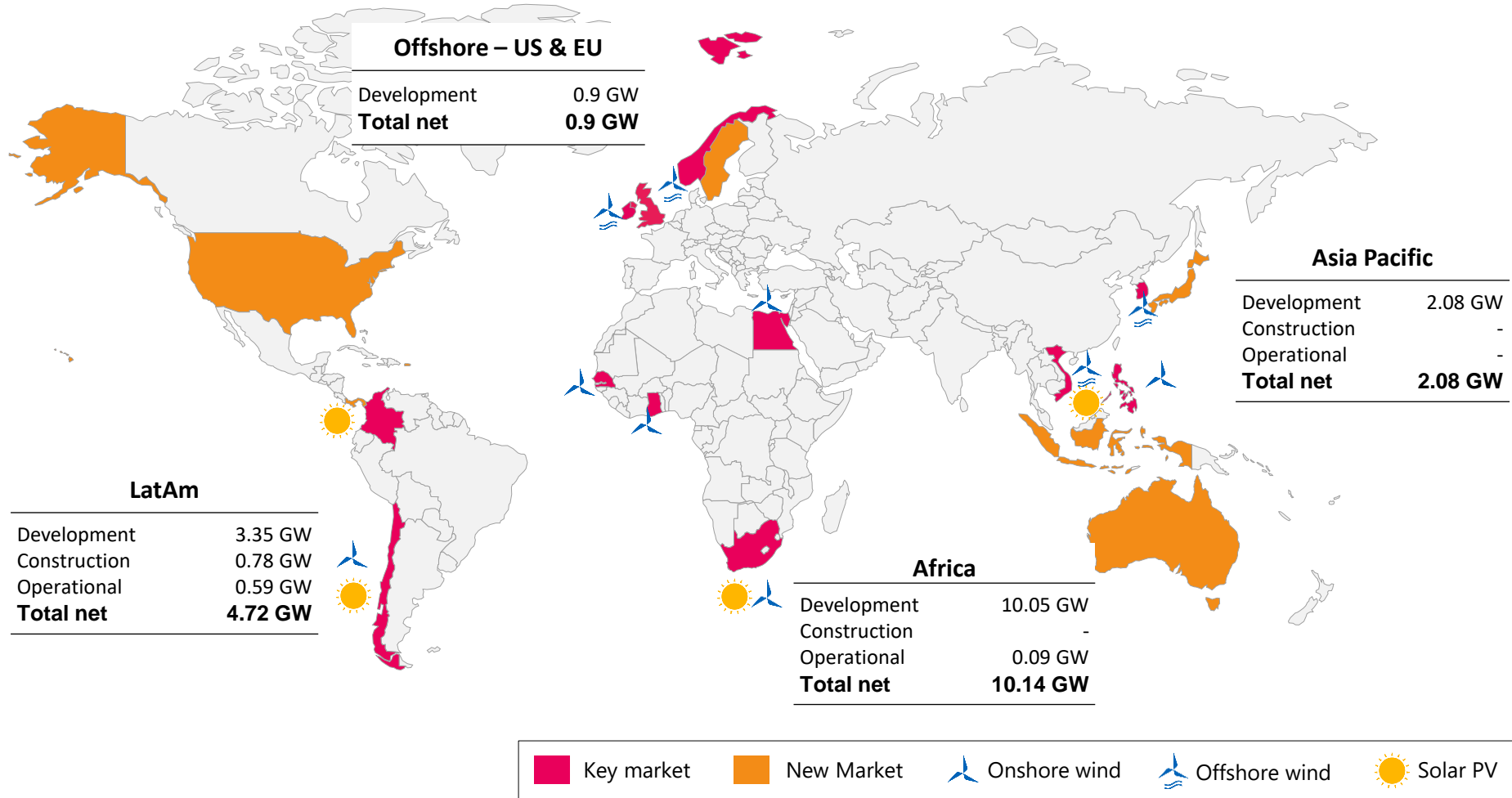
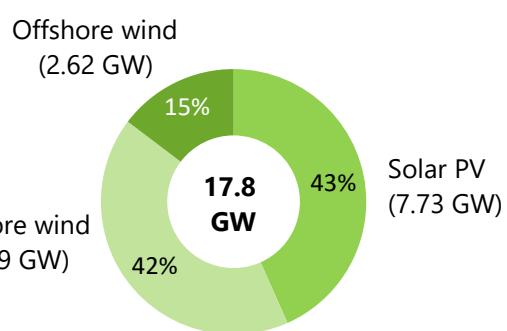


## Reflects assets in development, construction and operation

### Capacity distribution by geography



### Capacity distribution by technology



■ Key market   
 ■ New Market   
 Onshore wind   
 Offshore wind   
 Solar PV

Note: All figures shown on a net ownership basis at 30 June 2022, with the addition of 900 MW for ScotWind award.

# Our Values drive our Business forward

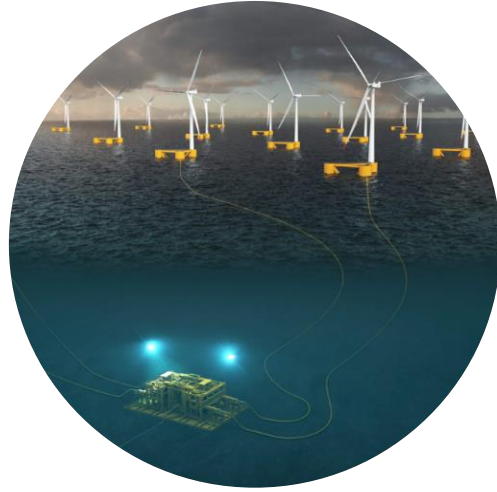
- Safety: Always safety first!
- Respect
- Integrity
- Entrepreneurship
- Teamwork
- Sustainability



# Planet Positive through...



Coexistence & green jobs



Net Zero Emissions

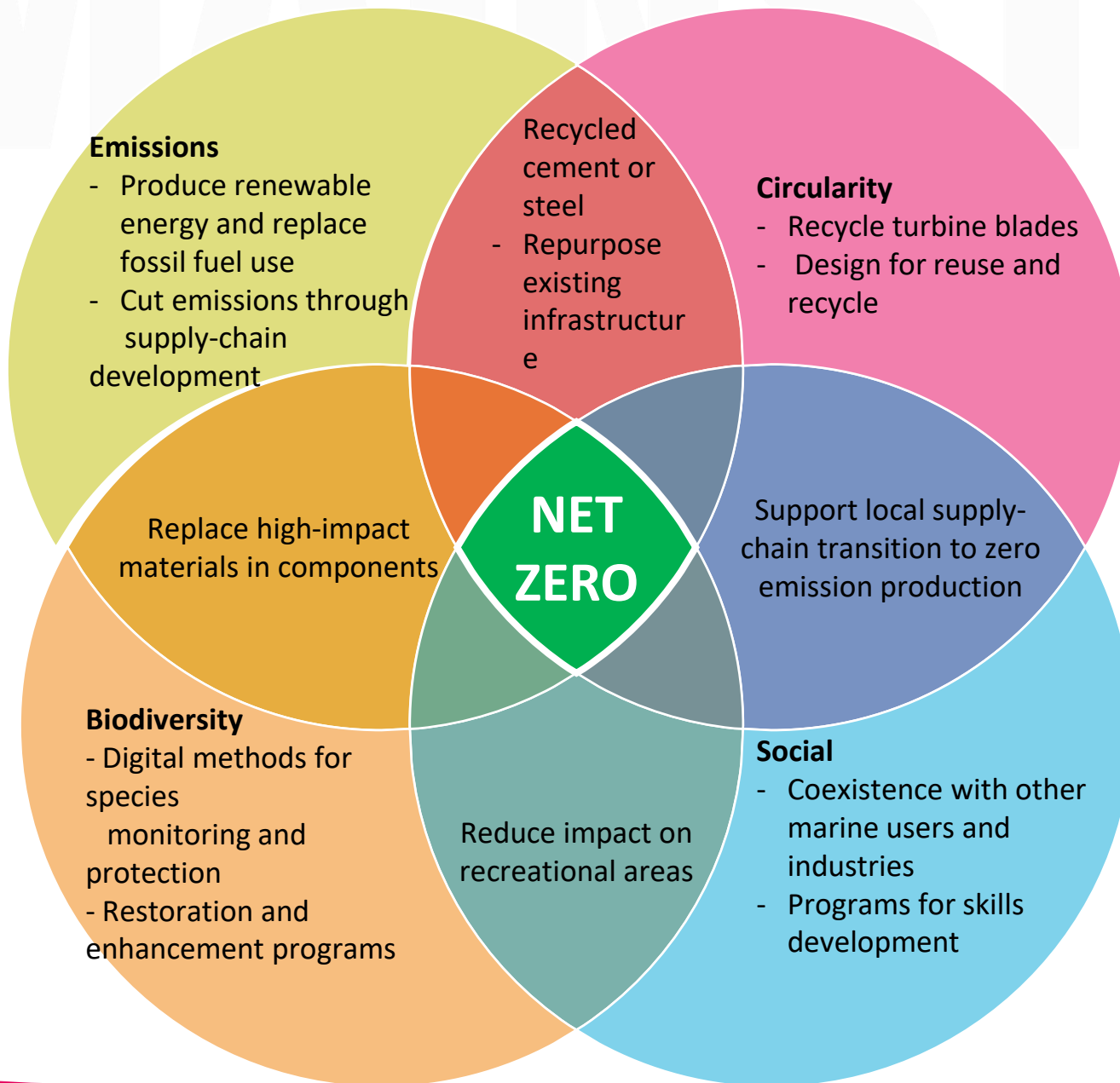


Protect Biodiversity

Our sustainability approach includes environmental, social and governance commitments which govern our project development and performance. Read more about our sustainable approach to offshore wind development here:

[Sustainability Report  
2021](#)

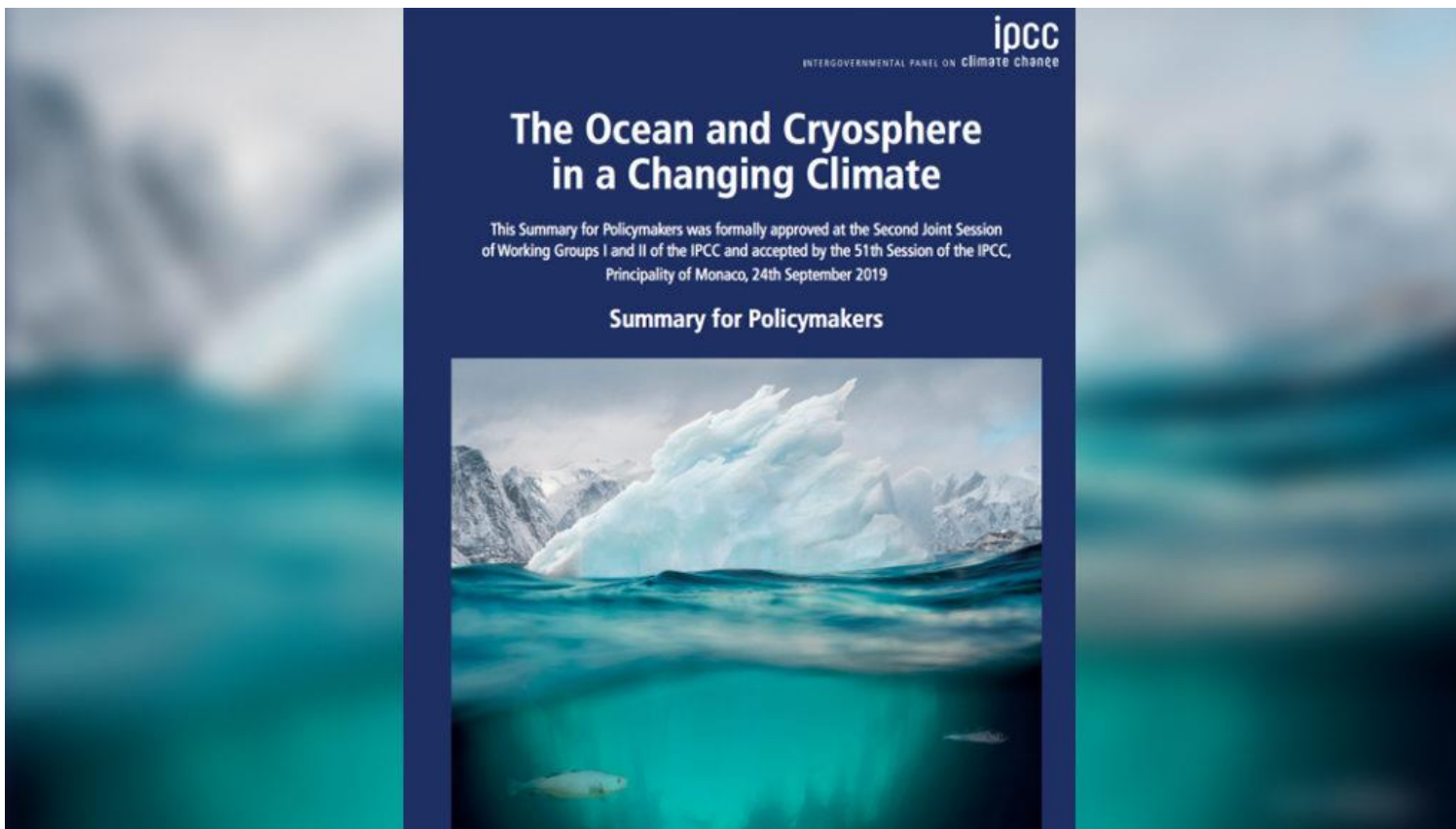




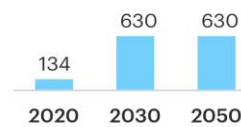
- ✓ Support government's climate targets
- ✓ Support government's targets to protect, preserve, and restore biodiversity
- ✓ Support local communities and their value creation
- ✓ Support investor's targets of green portfolio development



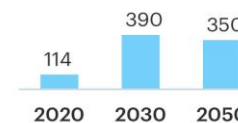
# Climate Change



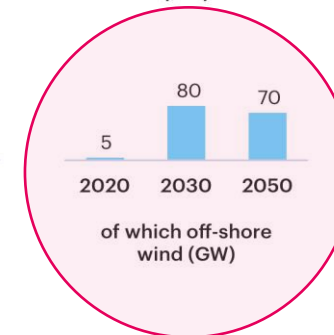
Renewables share in generation (%)



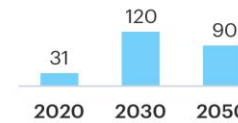
Annual capacity additions - Solar PV (GW)



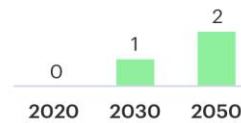
Annual capacity additions - wind (GW)



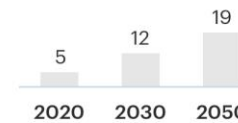
of which off-shore wind (GW)



Annual capacity additions - disp ren (GW)



Solar thermal and geothermal in industry (%)



Renewable share in TFC (%)



# Climate Risk Assessment and Management



**Table 14.7 Climate Change Impact Management**

Activity/Aspect	Potential Impact	Source Document	Adaptation Measure	Responsibility	Monitoring Parameter	Monitoring Frequency	Reporting
<b>Impact of Climate Change on the Project</b>							
<ul style="list-style-type: none"> <li>■ Extreme weather events, such as stronger and/or more frequent storms can reduce the output of energy, damage generation and grid infrastructure and affect security of the energy supply and make it difficult to access offshore locations for maintenance</li> <li>■ Rapid change in wind speed can reduce power generation because turbines cannot operate in very high or very low winds, and</li> <li>■ Flooding and landslides may affect the substation</li> </ul>	ESIA 9.7.3.2.4	Construction design should take into account the increase in wind intensity to ensure stability of the WTG and transmission line and avoid any community/occupational safety incidents	<ul style="list-style-type: none"> <li>■ Project Owner</li> <li>■ EPC contractor</li> </ul>	-	-	-	-
		For transmission and distribution (including the substation), specifying redundancy in control systems, multiple transmission and distribution routes and relocation. Where stronger winds are expected, higher design standards for distribution poles may be adopted					
		The planned areas for vegetation clearance planned, linked to the construction works shall be clearly determined and demarcated by landmarks to avoid accidental clearing. Site clearance plans will be prepared to identify areas that will be retained with natural vegetation within the Site's boundaries					
		Clearing vegetation outside of designated areas will be prohibited for Project staff, workers, all contractors and personnel engaged in or associated with the Project, with sanctions, including fines and dismissal, and prosecution under the relevant laws for clearing vegetation					
		Some mitigation measures regarding transport planning should be done to avoid unnecessary trips that would require more vegetation clearance					

## SocTrang Wind Power Plant, Vietnam

(1) Pre-mitigated risk, not to be included as-is in risk matrix

	Peril	Key trend	Impact	Indicator confidence	Risk level <sup>1</sup>
Chronic	Rising temperatures	• +1°C between 2020 and 2030	Negative impact on energy output.	High	Medium
	Precipitations	• Increasing yearly precipitations (+150mm), over summer (+75mm) and winter (+75mm) • Increasing very high precipitation days (+3-4 days/yr)	Precipitations cause leading-edge erosion, aggravated with larger raindrops and high tip speeds.	Medium	Medium
Acute	Extreme heat	• x2 hot days/year between 2020 and 2050 • +0.5-1°C in max. summer T* by 2050 relative to 2020 (31.2°C -> 32°C)	Accelerated generator aging, lowers gearbox performance, power curtailment.	High	Medium
	Freezing conditions	• No exposition to freezing conditions	Ice accumulation on blades can damage turbines or on-site infrastructure through ice throw and degrade turbine yield.	High	Low
	Wildfire	• No risk, unchanged	Wildfires can have negative impact on assets and on surrounding facilities (storage, access roads...).	High	Low
	Tropical cyclones	• Medium exposition to tropical cyclones, 21.1 m/s wind gust with RP=100yr	Damage of on-site or nearby infrastructure. Risk on WTG if designed with underestimated extreme wind parameters	Medium	Medium



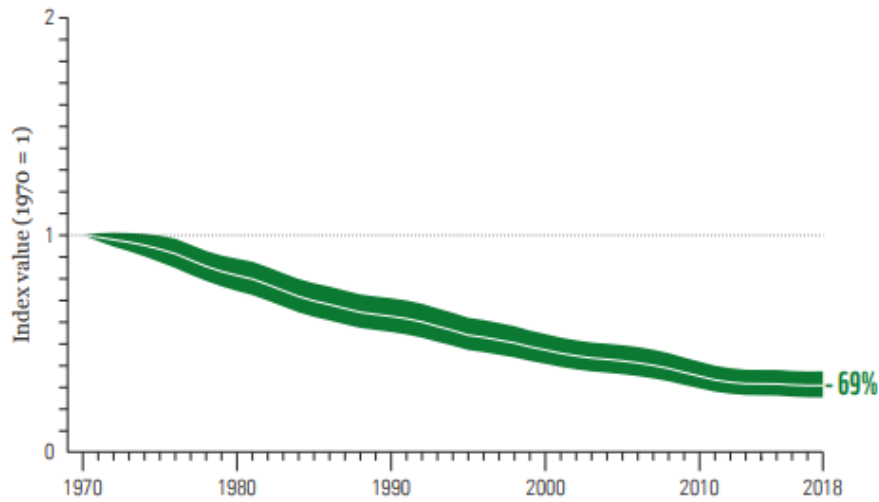
# Biodiversity



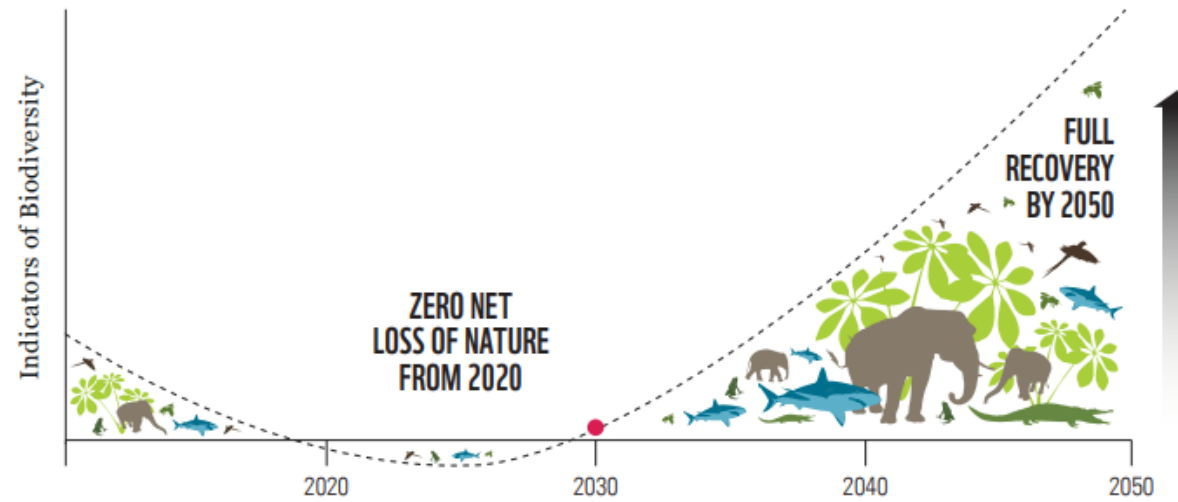
**Figure 3: The global Living Planet Index (1970 to 2018)**  
 The average change in relative abundance of 31,821 populations, representing 5,230 species monitored across the globe, was a decline of 69%. The white line shows the index values and the shaded areas represent the statistical certainty surrounding the trend (95% statistical certainty, range 63% to 75%). Source: WWF/ZSL (2022)<sup>184</sup>.

**Key**

- Global Living Planet Index
- Confidence limits



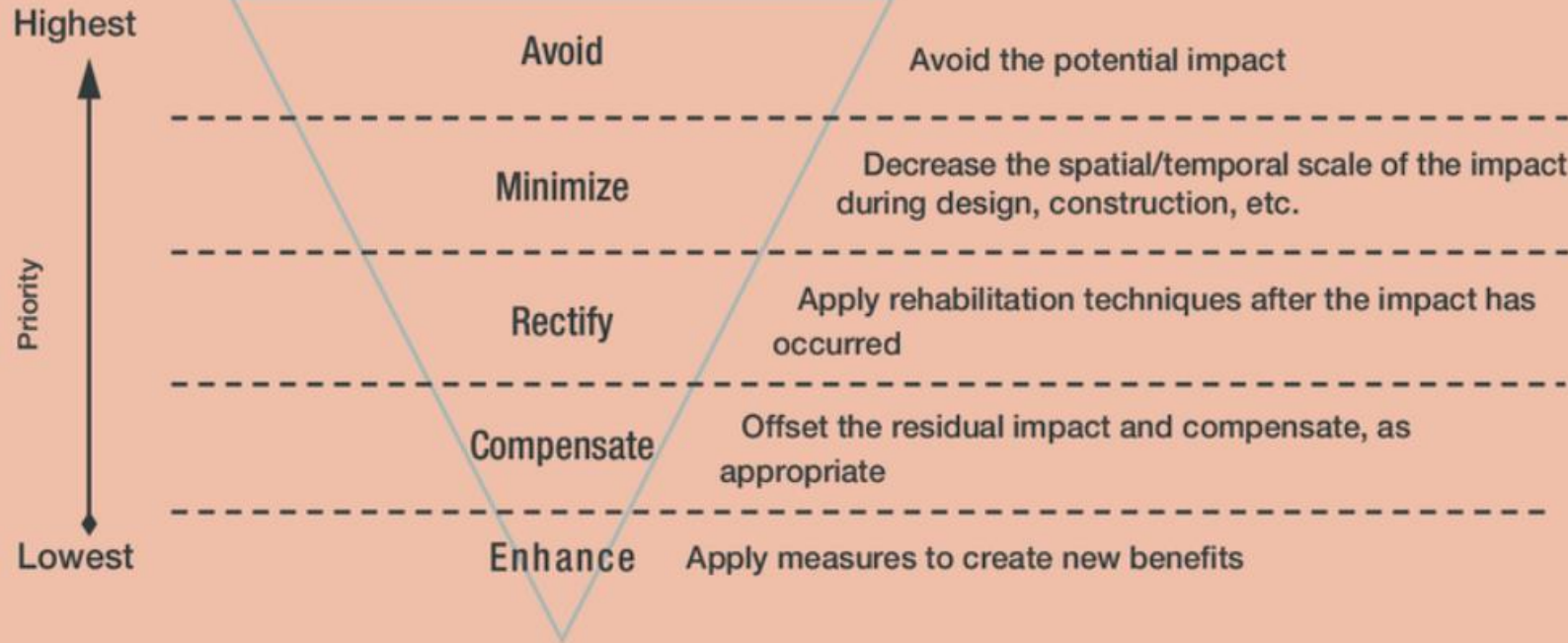
**Figure 23: Nature Positive by 2030**  
 A measurable global goal for nature. Source: Locke et al. (2021)<sup>193</sup>.



Source: WWF Living Planet Report 2022



# Mitigation Hierarchy



11 MAY 22 NEWS COMMUNITIES VIETNAM

## MANGROVE PLANTING FUNDED AS PART OF WIND FARM ENVIRONMENT PLEDGE



Support for a new CO<sub>2</sub>-absorbing mangrove forest on Vietnam's Mekong Delta aligns with managing the environmental impact of Mainstream's local joint venture project, the Phu Cuong Soc Trang offshore wind farm

# FLOATING OFFSHORE WIND

## OPPORTUNITIES

### CO-EXISTENCE:

- Tourism
- Fisheries (stationary equipment)
- Military (allow for sensors on structures)
- Shipping (corridors)

Increased food supply  
Resting locations

Increase in hard substrate  
Increased food supply



Increased biodiversity



Increased size and age

Increased reproduction

Increased number of individuals



Increase in nutrients and organic material



Introduction of desired species



Refuge



Microplastics from erosion



Pollution

Spreading unwanted species

Vibrations

Sub-sea sound

Electromagnetic fields (EMF)

Wake effects on local climate

Habitat loss  
Collision  
Displacement  
Attraction  
Avoidance



Surface disturbance



Disturbance to water layering properties

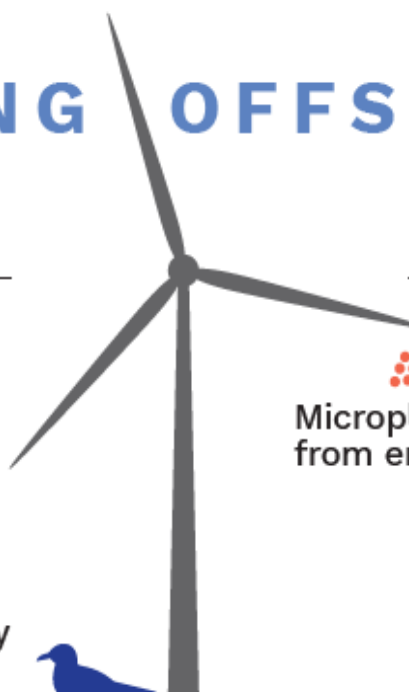


Secondary entanglement



Vulnerable habitats

Seabed disturbance



- Airside Monitoring**
- Inform if seabirds and cetaceans are avoiding or being displaced from the project area
  - Inform interactions such as attraction, avoidance, and perching/haul out.
  - Seabird Collision & Avoidance

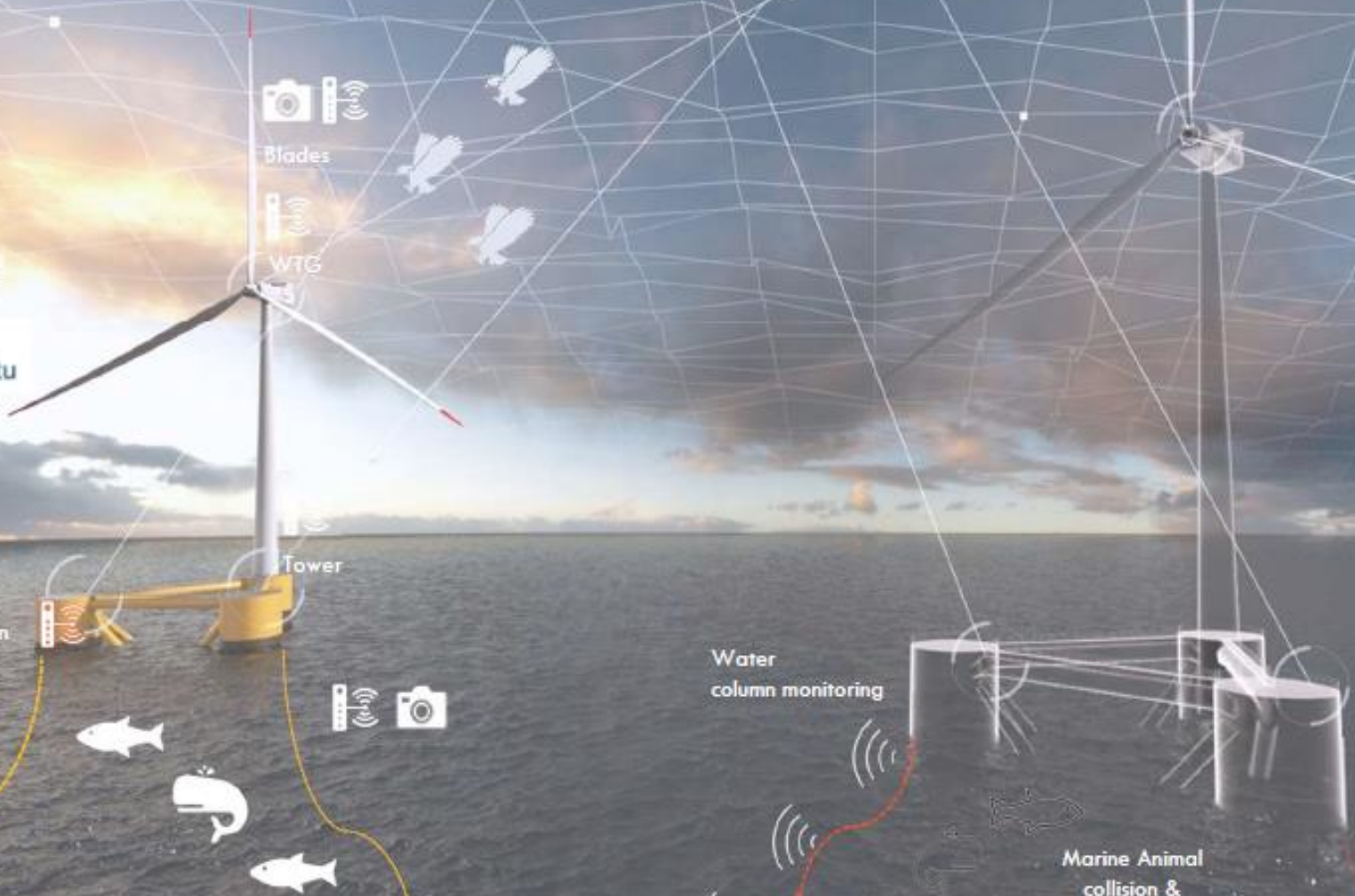
- WTG:**
- Remaining life of a turbine
  - Predictive analysis of incipient failure models
  - Performance verification

- Blades:**
- Structural health monitoring as it allows damage or misalignment to be detected (blade striking the tower)

- Mooring Lines & Cables:**
- Verify line tension
  - Identify failure
  - Full history of mooring line tension, line creep and re-tensioning efforts



AKER OFFSHORE WIND

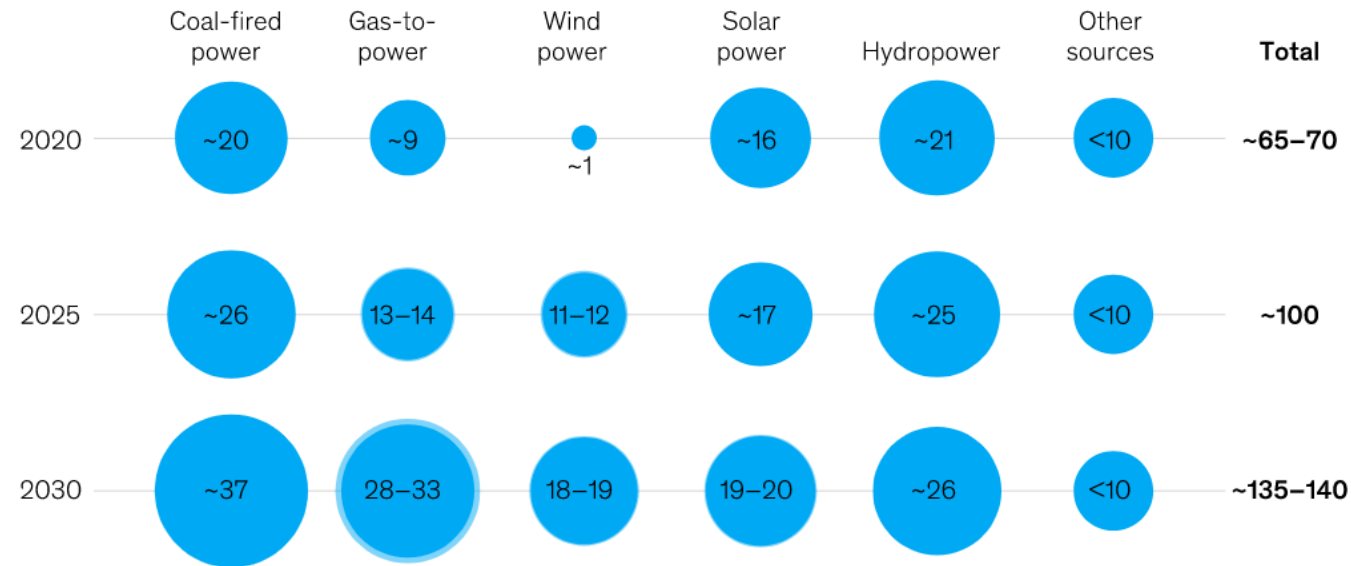


- Foundation:**
- Structural integrity that uses high-frequency data to identify issues such as rotor imbalance and a foundation degradation

# Social benefits

Vietnam's energy plan (PDP8) sets goals for generation-capacity increases from 2021 to 2030.

Capacity, gigawatts



Source: Draft PDP 8

McKinsey & Company

IRENA  
International Renewable Energy Agency

## Renewable Energy and Jobs

Annual Review 2022

**12.7**  
million jobs  
in 2021

In collaboration with  
International Labour Organization



# Community Benefits



30 MAR 21 NEWS COMMUNITIES VIETNAM

## COMMUNITIES DEVELOPING OPPORTUNITIES AROUND SOC TRANG WIND FARM



Locals show agreement during a meeting about how Mainstream's offshore joint venture project can help sustain the economy of Vinh Chau and its surrounding area

## WIND PROJECT FOOD PARCELS PROVIDE TET FESTIVAL JOY FOR THOSE IN NEED



This woman can look forward to celebrating the Tet holiday after receiving one of the food packages distributed by Mainstream's team in Soc Trang province

# Indigenous Communities

**Table 5.3 FPIC Identification**

Circumstance	Observations	Applicability for Khmer community	Applicability for Hoa community
Impact on lands and natural resources subject to traditional ownership or under customary use	It was not yet clear if any collectively owned land would be acquired for the Project. This situation would be determined once the land acquisition plan for project was finalised.  However, offshore construction was likely to impact marine water and coastal ecology, thereby affecting fish and other aquatic resources on which Khmer livelihood depends. Being a coastal community, use of these natural resources was part of their customary practice. Khmers celebrate Le Phuoc Bien or Chroirum check, which is linked to the sea and fishing.	Applicable and requires FPIC	Not Applicable
Relocation of IPs/Ethnic Minorities from lands and natural resources subject to traditional ownership or under customary use	It was not clear at this stage whether there would be a need for physical relocation of IPs. However, from discussion with the local authorities, it was anticipated that if required, the number of affected households would be relatively small and that they would be able to relocate to alternate locations within the same commune. Hence, their access to traditionally/collectively owned lands and natural resources was not likely to be severed.	Not Applicable	Not Applicable
Significant impact on critical cultural heritage	Based on current levels of project information, no significant impacts on Khmer and Hoa critical cultural heritage are anticipated.	Not Applicable	Not Applicable

16 MAY 19 NEWS COMMUNITIES VIETNAM

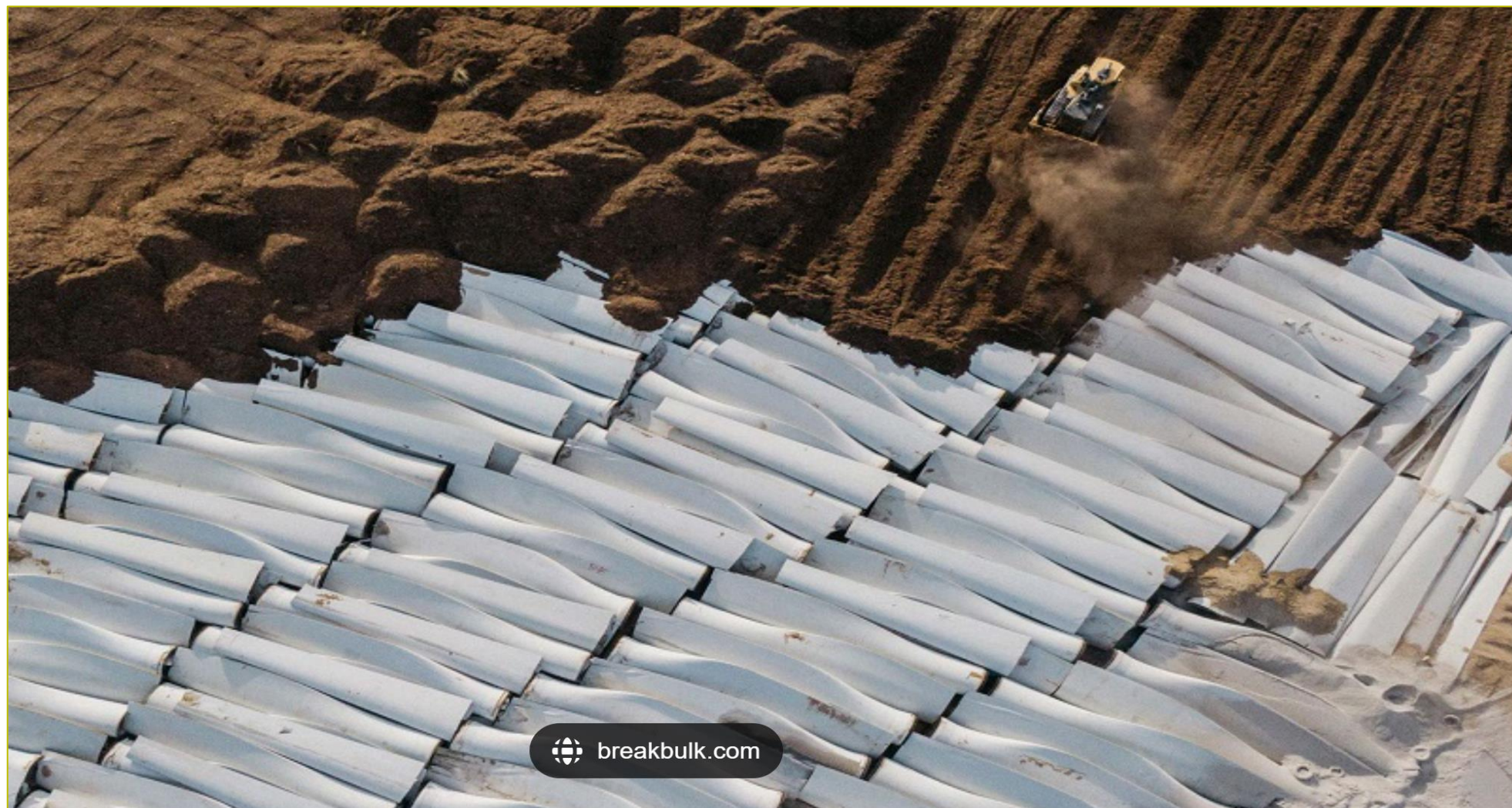
## SPONSORSHIP OF NEW HOMES IN THE MEKONG DELTA

Mainstream Renewable Power, together with its Vietnamese Partner the Phu Cuong Group (“PCG”), has sponsored the building of three new homes in the Mekong Delta. The house building programme, which was spearheaded by PCG, is aimed at providing improved living conditions for families living on low incomes.



The three houses were built by the local Kien Giang Province and the families are now living in their new homes.





# End of Life and Circular Economy









SDG and Related target	Examples of activities	Testimonial
 <p>8.3 – Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.</p>	<ul style="list-style-type: none"> <li>&gt; We are committed to supporting local jobs and stimulating local economies where we are developing, building and operating projects.</li> <li>&gt; The average number of contractors employed across our sites in 2021 was 2,565 in Chile 899 in Africa</li> <li>&gt; Rolled out community initiatives facilitating job growth and helping cultivate new businesses through launch of new business hub helping entrepreneurs get established.</li> <li>&gt; Joined industry collaboration 'IRENA Coalition for Action' Call to Action for COP26 for job and enterprise creation in the renewable energy sector to be complemented with labour and socio-economic policies in the energy sector.</li> </ul>	 <p><b>Enterprise Grants targeted to drive job creation and training</b> A diverse range of enterprises received funding under a wind farm programme set-up to empower a local South African community and to help shape and drive its own development.</p> <p>Small and medium-size businesses, non-profit companies and a non-profit organisation were awarded grants by Noupoot wind farm following a series of workshops involving change-activists from the surrounding Northern Cape area.</p> <p>As well as the funding, all of the beneficiaries received mandatory financial management training to help maximise the positive outcomes from the support.</p>  <p><i>"Our workshops were very well received and drew up to 70 locals that are community change activists, so we were well prepared for a good number of applicants with solid proposals."</i></p> <p><b>Sandiswe Mntoninshi, Economic Development Manager for Noupoot wind farm, South Africa.</b></p>

SDG and Related target	Examples of activities	Testimonial
 <p>13.2 – Integrate climate change measures into national policies, strategies, and planning.</p>	<p>Mainstream is actively engaged with government and trade association bodies around our markets.</p> <ul style="list-style-type: none"> <li>&gt; Mainstream played an active role in COP26, engaging with governments to help deliver their net zero targets.</li> <li>&gt; Mainstream initiated the Dublin Climate Dialogues, a pre-COP26 think-in that included contributions from US Presidential Envoy for Climate, Senator John Kerry, and Dr Fatih Birol, Director of the International Energy Agency, calling for a phasing out of coal power by 2030 and for calling for a phasing out of coal power by 2030 and calling for accelerated action at COP26.</li> </ul>	 <p><b>Policy Engagements</b> Our group CEO, Mary Quaney (pictured centre above), restated Mainstream's commitment to help accelerate Vietnam's #EnergyTransition when she met Prime Minister Pham Minh Chinh at COP26.</p> <p><i>"Regularly updated medium term energy plans like Vietnam's add further certainty and help to reduce the cost of deployment."</i></p> <p><b>Mary Quaney, Group Chief Executive.</b></p>

SDG and Related target	Examples of activities	Testimonial
 <p>5.5 – Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.</p>	<p>Mainstream committed to the continued development of women across the business:</p> <ul style="list-style-type: none"> <li>&gt; Sponsored the Global Wind Energy Council (GWEC) Women in Wind Leadership Programme.</li> <li>&gt; Initiated a 'Impact and Influence for Women in Business' series of online workshops.</li> <li>&gt; Progress targets for Women in leadership positions as part of its Diversity and Inclusion programme.</li> </ul>	<p><b>Women in Wind Leadership Programme</b> For a third year running, Mainstream sponsored the Global Wind Energy Council's 'Women in Wind Global Leadership Programme'. Its objective is to advance the role of women as agents of change in society and the energy transition, and to promote best practices within the wind industry. The programme is designed to accelerate the careers of women in the wind industry, support their pathway to senior leadership positions and foster a global network of mentorship, knowledge-sharing and empowerment.</p>  <p>Andrea was confirmed Mentee for the GWEC programme in 2021.</p> <p><i>"I look forward to developing new skills and to taking new challenges that will allow me to contribute to the industry and encourage more women and men to collaborate and get rid of gaps, fears and bias."</i></p> <p><b>Andrea Cornejo, Development Project Manager, Chile</b></p>

SDG and Related target	Examples of activities	Testimonial
 <p>7.2 – By 2030, substantially increase the share of renewable energy in the global energy mix.</p>	<p>In 2021, ten projects in Chile were in construction and two in Africa.</p> <ul style="list-style-type: none"> <li>&gt; Mainstream directly added 571 MW to the grid in Chile in 2021</li> <li>&gt; Continued global development pipeline expansion to 16.6 GW at the end of 2021.</li> <li>&gt; Successfully won 1.27 GW in South Africa's government-led procurement round.</li> <li>&gt; Projects under construction in Chile through the remainder of the Andes Renewables platform will provide energy to over 1 million homes when fully operational.</li> </ul>	 <p><b>Increasing delivery of renewable energy at scale.</b> Mainstream's wholly owned Andes Renewables will add 1.4 GW of power to the grid in total powering over 1.7 million typical Chilean homes.</p> <p><i>"Our company decided to invest in the country due to its great potential for the development of renewable energy, and with the conviction of lowering the prices of electricity generation in Chile."</i></p> <p><b>Manuel Tagle, General Manager – LATAM</b></p>

SDG and Related target	Examples of activities	Testimonial
 <p>16.10 – Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.</p>	<p>Mainstream is committed to open and timely communication to all its stakeholders and most importantly to the communities in which it operates.</p> <ul style="list-style-type: none"> <li>&gt; Our teams hold community events and workshops to engage with communities.</li> <li>&gt; Our teams adhere to project development in alignment with the IFC Standards and Equator principles and our Mainstream's Global Development Standard.</li> <li>&gt; We respect our indigenous communities. Our projects are developed in line with the International Labour Organisation's Indigenous and Tribal Peoples Convention, 1989 (No 169).</li> </ul>	 <p><b>Stakeholder Engagement</b> Our Global Development Standard is benchmarked against established international standards including the UN Guiding Principles on Business and Human Rights and other international organisations. This includes providing timely and relevant information to all stakeholders including our communities.</p> <p>Members of the local ethnic minority populations were also consulted in line with development standards set out by the International Finance Corporation, part of the World Bank Group.</p>  <p><i>"We are committed to sustainable development and to ensuring that the project will bring opportunities to them. Our goal is to be a good neighbour and not to adversely impact fishing livelihoods..."i&gt;</i></p> <p><b>Bernard Casey, Chief Operating Officer, APAC.</b></p>

SDG and Related target	Examples of activities	Testimonial
 <p>4.4 – By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship.</p>	<p>Education is a central theme of our community development programmes.</p> <ul style="list-style-type: none"> <li>&gt; Several bursary programmes were run by wind farms in South Africa's Northern Cape, which exclusively provides for existing tertiary level learners from communities in local Municipalities</li> <li>&gt; Business mentors in the community provided school principals with key leadership skills through the 'Partners for Possibility, Leadership Development &amp; Principal Support Programme'.</li> <li>&gt; A bursary programme in its fifth year in 2021, supported 15 students from the Loeriesfontein area at tertiary education institutions across South Africa</li> <li>&gt; Internet connections and wifi networks installed at secondary level institutions in South Africa's Northern Cape, supporting the District Department of Education's digital technology strategy for classrooms.</li> </ul>	<p><b>Bursary Award - South Africa</b> Este-Lee Nel is one of five learners from Loeriesfontein in the Northern Cape who is financially supported through her third-level studies with the financial support from Loeriesfontein and Khobab wind farms.</p>  <p>Este-Lee Nel said: <i>"This helps me to get one step closer to my big dream of becoming one of our country's female engineers. The bursary relieves me financially so that I can stay focused on my studies and give my best."</i></p>  <p><i>"The bursary is one step towards making it possible for students to pursue their academic dreams. With the chance to further their education, each student is given the opportunity of a brighter, and better economic future."</i></p> <p><b>Vanessa Fredericks, Economic Development Manager for Loeriesfontein and Khobab wind farms, South Africa.</b></p>



Sustainability Report 2021

## ACCELERATING THE TRANSITION TO RENEWABLE ENERGY



Thank you for your  
attention!

