

Chapter S4.0: Social and Economic Effects of Marine Renewable Energy

Supplementary Material

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S4.1. Regulatory Context

Table S4.1 provides information on requirements for social and economic data collection for each of the Ocean Energy Systems-Environmental countries.

Table S4.1. Social and economic regulatory context for marine renewable energy (MRE) in Ocean Energy Systems (OES)-Environmental countries. Countries with an asterisk (*) have a [country-specific guidance document](#) on Tethys.

Country	Social and Economic Regulatory Context for MRE
Australia*	The Offshore Electricity Infrastructure Act (2021) requires consultation with stakeholders, such as existing marine users and First Nations communities, to inform declaration of an offshore area. License applications are required to provide sufficient information for an assessment of the forecast socioeconomic benefits of the proposed project, should it proceed to a commercial license (Department of Climate Change, Energy, the Environment and Water 2024). These could include benefits to the broader economy, potential jobs creation, regional development, Australian content, potential contribution to electricity grid supply, energy security, emissions reductions, and/or benefits to international relations. In addition, as part of the feasibility licensing, a management plan is required for the entire length of the planned project. This must include details of how potential impacts on other marine users will be avoided or accounted for and a meaningful shared (community) benefits plan for the proposed project.
Canada*	Per the Impact Assessment Act (2019), assessments of proposed projects consider environmental, health, social, and economic effects. Provinces may have additional processes, for example: <ul style="list-style-type: none">• The province of Nova Scotia has stakeholder, taxpayer, and ratepayer engagement during the Strategic Environmental

	<p>Assessment of a project and throughout its lifecycle. Provincial energy issues are discussed at an Energy Consultation Table with federal authorities and the Mi'kmaq, the First Nations of Nova Scotia, led by the Nova Scotia Department of Natural Resources and Renewables (Ocean Energy Systems 2024).</p> <ul style="list-style-type: none"> • Nova Scotia's Marine Renewable-energy Act (2015) requires the Minister of Natural Resources and Renewables to generate a report detailing socioeconomic factors relevant to sites undergoing public consultation processes for MRE.
China*	<p>The Environmental Impact Assessment (EIA) Law (2003), set specific parameters for planning EIAs and established the EIA system's legal status, but did not explicitly address social issues (Yang et al. 2023). Since then, public participation and social impact assessments (SIA) have been incorporated more informally into the EIA process (Ren 2013), and in 2012 China began requiring social risk assessments for major development projects (Price & Robinson 2015). The EIA Law was amended in 2016 and 2018 to address with social and economic development and changes to industries (Yang et al. 2023).</p>
Denmark*	<p>Social and economic impact assessments (SEIAs) are required in Denmark as part of the EIA completed during consenting processes. The Energy Policy Agreement of 21 February 2008 requires initiatives to be undertaken to promote local acceptance, including options for public ownership or purchasing shares in new projects (International Energy Agency 2017).</p>
European Union (EU)	<p>In 2014, the EU updated the EIA Directive to include population and human health, biodiversity, risk prevention, climate change, and landscape (Directive 2014/52/EU 2014). These requirements were transposed into member-state national EIA legislation by May 2017 under EU law, and have since been updated under the Renewable Energy Directive (RED III) (EU/2023/2413). Article 15d of RED III states that Member States shall ensure public participation regarding the plans designating renewables acceleration areas, including identifying the public affected or likely to be affected. The update also supports collaboration with social partners and establishment of renewable energy communities to anticipate workforce needs and develop training and upskilling programs.</p>
France*	<p>The Environmental Code calls for considering people in "any public decision-making having a significant impact" (Article L110-1 - Code de l'environnement, République Française 2021). The Code requires additional analysis of project impacts on cultural heritage that includes architecture and archaeology, impacts on the visual landscape, and the level of nuisance created for humans by project noise, vibration, or light.</p>
India	<p>Since 2006, India has required consideration of social and economic factors in development activities, including anything that would "affect the welfare</p>

	<p>of people e.g., by changing living conditions,” impacts on vulnerable groups of people, the generation of nuisance noise or light, disturbance of tourist routes or facilities, and impacts on “areas occupied by sensitive [human]-made land uses (hospitals, schools, places of worship...)” (Ministry of Environment and Forests 2006). SIAs require analysis of individual and family changes, population characteristics, community resources relevant to any development, political and social resources, and community and educational structure (The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013).</p>
Ireland*	<p>Applications for Maritime Area Consents, which cover certain projects between the high-water mark and the outer limit of the continental shelf, go through a general assessment that involves stakeholder engagement and a public interest test (Maritime Area Regulatory Authority 2024). A Maritime Area Consent is required prior to applying for development consent. It is during the development consent process that all necessary environmental assessments are conducted. Social and economic data collection are partially included as part of site-level EIA, but associated documentation of effects varies widely.</p>
Japan*	<p>No regulatory or policy frameworks specific to social and economic effects for MRE have been identified. Current processes focus on fisheries management and marine spatial planning.</p>
Mexico*	<p>The Ministry of Environment and Natural Resources evaluates the impact that a work or construction will have on the environment through an EIA, which includes socioeconomic analyses within it (Secretaría de Medio Ambiente y Recursos Naturales 2018).</p>
Portugal*	<p>The 2021-2030 National Ocean Strategy lists several strategic goals, including promoting health and wellbeing, and improving education, qualification, culture, and ocean literacy (Republic of Portugal, 2021). Social and economic effects must be considered by all environmental impact assessments (Environmental Appraisal, EIA, and Strategic Environmental Assessment) under EIA legislation (Decreto-Lei n.º 232/2007).</p>
Singapore	<p>There are no comprehensive social and economic impact assessments specifically required for MRE in Singapore. However, MRE projects need to comply with the Environmental Protection Act (2021) requirements for environmental impact assessments, which includes human health impacts (including air quality and noise pollution) and navigation safety. The Sustainable Energy Association of Singapore (2017) is heavily involved in the development of MRE, including aspects of workforce and industry development.</p>
Spain*	<p>The <i>Roadmap Offshore Wind and Marine Energy in Spain</i> report states that one of its objectives is to boost “a sustainable development of offshore</p>

	<p>renewables, consistent with an environmental and social approach” (Ministry for the Ecological Transition and the Demographic Challenge 2022). No specific regulations for the assessment of MRE impacts on social and economic systems exist, but the Ministry for the Ecological Transition and Demographic Challenge has required these effects to be included in environmental assessments (Ministry for the Ecological Transition and the Demographic Challenge 2022)</p>
<p>United Kingdom (UK)</p>	<p>The UK Government announced a review of the existing National Policy Statements in December 2020 and published an Overarching National Policy Statement for Energy (Department for Energy Security and Net Zero 2023). It stated that “Where the project is likely to have [socioeconomic] impacts at local or regional levels, the applicant should undertake and include in their application an assessment of these impacts... the assessment should consider all relevant [socioeconomic] impacts which may include the creation of jobs and training opportunities.” The Energy Act 2004 (2004) requires MRE project developers to create decommissioning programs, and all qualifying EIA projects must consult with Historic Environment Scotland, which provides advice on how the historic environment may be impacted.</p> <p>The UK Government has published a ten-point plan for “a green industrial revolution” (Government of the United Kingdom 2020), and a net-zero strategy (Government of the United Kingdom 2021). This plan focuses on offshore wind production, though implies that implementation of the plan could significantly reduce social impacts on coastal communities.</p> <ul style="list-style-type: none"> • <u>Scotland</u>* - The Energy Strategy and Just Transition Plan draft was released in January 2023, and has a goal of considering community benefits, ensuring a fair and inclusive process through stakeholder involvement, and maximizing economic benefits in the transition to net zero (Scottish Government 2023). Several MRE projects have included assessments of socioeconomic aspects in Environmental Statements. • <u>Northern Ireland</u> - The Department for the Economy commissioned a strategic environmental assessment of the <i>Offshore Renewable Energy Action Plan</i> in September 2023 (RPS Group 2023). This scoping report contained a section on cultural heritage, discussing potential indirect and direct effects from construction of energy projects. Project developments will require an EIA, and within it there may be further consideration of local and regional social and economic aspects. • <u>Wales</u>* - Sector locational guidance reports on tidal and wave energy were published in December 2021 and then updated in June 2022 (Welsh Government 2022a, 2022b). These reports detail how social considerations, such as demographics and cultural identity, are a priority for the government and how the tidal and wave energy sectors can promote them. However, both reports state that social

	constraints are unlikely to significantly influence location of developments.
United States (US)*	SIAs have been a part of the National Environmental Policy Act (1969) legislation since its initial adoption in 1970. Several other pieces of legislation, including the Magnuson-Stevens Fishery Conservation and Management Act (1976) and the Outer Continental Shelf Lands Act (1953), have included requirements for an SIA. The Coastal Zone Management Act (1972) requires that any federal actions in the coastal zone be consistent with state-level policies, and performance is measured with collection of social and economic data (in addition to other environmental trends). Coastal requirements among states in the US vary and may be significant. The <i>Ocean Climate Action Plan</i> , published in March 2023, discusses expanding the offshore wind and marine energy industries in part through the use of a socioeconomic review process, though this has not yet been implemented (Ocean Policy Committee 2023).

S4.2. References

Article L110-1 - Code de l'environnement, République Française, Pub. L. No. Law No. 2021-1104, Art. 48 (2021). https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000033033501/2023-12-28

Coastal Zone Management Act (CZMA) of 1972, 16 U.S.C. § 1451 et seq (1972). <https://coast.noaa.gov/czm/act/>

Decreto-Lei n.o 232/2007, (2007). Ministério do Ambiente, República Portuguesa, Série, No. 114 3866 (2007). <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC072686/>

Department for Energy Security and Net Zero. (2023). *Overarching National Policy Statement for energy (EN-1)* [Policy Paper]. Government of the United Kingdom. <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>

Department of Climate Change, Energy, the Environment and Water. Australian Government. (2024). *Guideline: Offshore Electricity Infrastructure Licence Administration – Feasibility Licences*. https://www.nopta.gov.au/_documents/oei/Guideline_OEI_Licence_Administration_Feasibility_Licences_March_2024.pdf

Energy Act 2004, c. 20 (2004). <https://www.legislation.gov.uk/ukpga/2004/20/contents/enacted>

Environmental Protection and Management Act 1999, (2021). <https://sso.agc.gov.sg/Act/EPMA1999>

Government of the United Kingdom. (2020). *The Ten Point Plan for a Green Industrial Revolution* (p. 38) [Policy Paper]. <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution/title>

Government of the United Kingdom. (2021). *Net Zero Strategy: Build Back Greener* (p. 368) [Policy Paper]. <https://www.gov.uk/government/publications/net-zero-strategy>

Impact Assessment Act, S.C. 2019, c. 28, s. 1 (2019). <https://laws.justice.gc.ca/eng/acts/i-2.75/FullText.html>

International Energy Agency (IEA). (2017). *Danish Energy Agreement for 2008-2011*. <https://www.iea.org/policies/54-danish-energy-agreement-for-2008-2011>

Law of People's Republic of China on Environmental Impact Assessment (2003). https://english.mee.gov.cn/Resources/laws/environmental_laws/202012/t20201204_811509.shtml

Magnuson-Stevens Fishery Conservation and Management Act, Pub. L. No. 94–265, 16 U.S.C. §§ 1801 et seq. (1976). <https://www.fisheries.noaa.gov/resource/document/magnuson-stevens-fishery-conservation-and-management-act>

Marine Renewable-Energy Act, R.S.N.S., c.32 (2015). <https://nslegislature.ca/sites/default/files/legc/statutes/marine%20renewable-energy.pdf>

Maritime Area Regulatory Authority (MARA). (2024). *Applying for a Maritime Area Consent*. Maritime Area Regulatory Authority. Retrieved April 17, 2024, from <https://www.maritimeregulator.ie/maritime-area-consent-mac/>

Ministry for the Ecological Transition and the Demographic Challenge. (2022). *Roadmap Offshore Wind and Marine Energy in Spain*. Government of Spain. https://www.miteco.gob.es/content/dam/mitesco/es/ministerio/planes-estrategias/desarrollo-eolica-marina-energias/enhreolicamarina-pdf_accesible_tcm30-538999.pdf

Ministry of Environment and Forests. (2006). *Environmental Impact Assessment Notification*. Gazette of India. <http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>

National Environmental Policy Act, Pub. L. No. 91–190, 42 U.S.C. § 4321 et seq. (1969). <https://www.govinfo.gov/content/pkg/COMPS-10352/pdf/COMPS-10352.pdf>

Ocean Energy Systems. (2024). *Canada*. Retrieved April 17, 2024, from <https://www.oceanenergysystems.org/ocean-energy-in-the-world/canada/>

Ocean Policy Committee. (2023). *Ocean Climate Action Plan*. Government of the United States. https://www.whitehouse.gov/wp-content/uploads/2023/03/Ocean-Climate-Action-Plan_Final.pdf

Offshore Electricity Infrastructure Act, (2021). No. 120. <https://www.legislation.gov.au/C2021A00120/latest/text>

Outer Continental Shelf Lands Act, 43 U.S.C. § 1331 et seq (1953). <https://www.boem.gov/sites/default/files/documents/Outer-Continental-Shelf-Lands-Act.pdf>

Price, S., and Robinson, K. (2015). *Making a Difference?: Social Assessment Policy and Praxis and its Emergence in China* (1st ed.). Berghahn Books. <https://tethys.pnnl.gov/publications/making-difference-social-assessment-policy-praxis-its-emergence-china>

Ren, X. (2013). Implementation of Environmental Impact Assessment in China. *Journal of Environmental Assessment Policy and Management*, 15(03), 1350009. doi:10.1142/S1464333213500099. <https://tethys.pnnl.gov/publications/implementation-environmental-impact-assessment-china>

Republic of Portugal. (2021). *National Ocean Strategy 2021-2023* (p. 50).
<https://www.dgpm.mm.gov.pt/enm-21-30>

RPS Group. (2023). *Offshore Renewable Energy Action Plan: SEA scoping report* (IBE2154).
Government of Northern Ireland, Department for the Economy. <https://www.economy-ni.gov.uk/publications/offshore-renewable-energy-action-plan-sea-scoping-report>

Scottish Government. (2023). *Draft Energy Strategy and Just Transition Plan: Delivering a fair and secure zero carbon energy system for Scotland*. <https://www.gov.scot/publications/draft-energy-strategy-transition-plan/>

Secretaría de Medio Ambiente y Recursos Naturales. (2018, August 13). *Content of an Environmental Impact Statement*. Gobierno de Mexico. <http://www.gob.mx/semarnat/acciones-y-programas/contenido-de-una-manifestacion-de-impacto-ambiental>

Sustainable Energy Association of Singapore (SEAS). (2017). Retrieved March 12, 2024, from <https://www.seas.org.sg/>

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act. (2013). § Section 4. Preparation of Social Impact Assessment study.
https://www.indiacode.nic.in/show-data?abv=CEN&statehandle=123456789/1362&actid=AC_CEN_18_43_00003_201330_1517807327433§ionId=37815§ionno=4&orderno=4&orgactid=AC_CEN_18_43_00003_201330_1517807327433

Welsh Government. (2022a). *Sector Locational Guidance: Enabling Evidence for Sustainable Development Tidal Stream Energy*. <https://tethys.pnnl.gov/publications/sector-locational-guidance-enabling-evidence-sustainable-development-tidal-stream>

Welsh Government. (2022b). *Sector Locational Guidance: Enabling Evidence for Sustainable Development Wave Energy* (p. 98). <https://tethys.pnnl.gov/publications/sector-locational-guidance-enabling-evidence-sustainable-development-wave-energy>

Yang, Y., Xu, H., Zhang, Y., and Guo, X. (2023). The evolution of China's environmental impact assessment system: Retrospect and prospect from the perspective of effectiveness evaluation. *Environmental Impact Assessment Review*, 101, 107122.
<https://doi.org/10.1016/j.eiar.2023.107122>