

## GREENING OF MARITIME PORTS

### Is Regulation The Game Changer?

BY ANJALI SUGADEV, SORCHA FFRENCH, AND GEORGE RAMÍREZ

**O**ur industry depends on a fuel-intensive marine fleet to install, maintain, and repair subsea cables. Yet this fleet—for better or worse—is almost entirely absent when it comes to discussions of the environmental impact of digital media technologies. Infrastructures like boats and ports are both essential to global telecommunications and essential to reducing greenhouse gas reductions. If we pay attention to the marine sector, we will find new and innovative paths toward sustainability. In this article of the Sustainable Subsea Networks project, a research initiative of the SubOptic Foundation, we dive deep into one location of marine sustainability: the port.

Understanding the greening of maritime ports is critical. If the subsea cable industry knows where sustainable ports are, our ships can dock at places where climate-friendly practices are already established. Beyond this, understanding regulation is also critical. Many ports are more sustainable than others because they follow laws that regulate practices to reduce greenhouse gas emissions. Regulation also allows for port authorities to invest heavily on infrastructure, which is their key contribution to a carbon-reduced future. “We’ve always relied on rulemaking, which seems counterintuitive,” says Morgan Caswell at the Port of Long Beach. “You think organizations don’t want regulation, but we just want

good regulation.” Many of these laws enable ports to use future energy carriers with the potential for long-term oil substitution like hydrogen, ammonia, methanol, and biofuels.<sup>1</sup> The most popular among these is shore power, which shifts vessel emissions from fossil fuels to the landside grid.

Regulation is eventually coming that will affect the subsea industry. Getting ahead of the game, the industry could define good regulation that warrants marine vessels to be equipped with technology that is compatible with alternative fuel

sources and shore power. Infrastructure enhancement requires heavy investments, the motivation for which is often mandatory rules laid at an international, national, or local level. “The investment in new port facilities and greener vessels is expensive for both port operators and vessel owners but eventually it is something that will have to be done,” says Bruce Neilson-Watts, Chief Executive Officer of Global Marine. Subsea cable companies can offer voyage optimization strategies, partake in recycling initiatives, and participate in energy efficiency strategies, but the ships are the largest contributors to emissions. Regulation would also make carbon accounting for marine fleet emissions

<sup>1</sup> Directive 2014/94/EU of the European Parliament and the Council on the deployment of alternative fuels infrastructure available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0094>

more accurate. In this article we cover existing regulations that are relevant to the subsea sector, and whose implementation would be a proactive way to improve our environmental sustainability.

### THE THREE REGULATIONS

The Sustainable Subsea Network team recently interviewed port authorities around the world to better understand their capacity to reduce emissions. Along with identifying fifty sustainable ports, we found three pieces of regulation that impact the operations of ports and ships: IEC/ IEEE 80005-1:2019 on High voltage shore connection (HVSC) system, Directive 2014/ 94/ EU on Alternative Fuel Infrastructure (AFI) and Ocean-Going Vessels at Berth Regulation. These laws represent regulations at various hierarchical levels of enforcement - an international standard, a regional law and local regulation respectively. They are examples of the types of legal measures - hard binding law (California's AB regulation), a regional supra-national body's (EU's) directive that creates a framework for its Member States to develop punitive national rules and soft law that has recommendatory status (IEC/ IEEE HVSC standard). This article discusses these regulations to enable the subsea cable industry's vessels to adapt technologies that support sustainable infrastructure.

#### REGULATION 1: THE IEC/ IEEE HVSC SYSTEM AND SHORE POWER

The IEC/ IEEE HVSC system is an international standard published by the leading global standard-setting organization, International Electrotechnical Commission (IEC) to ensure compatibility with the world's

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shore power systems. This is currently the first technical reference that describes the system onboard the ship and on the shore<sup>2</sup> and sets the stage for unification of shore to ship equipment by eliminating differences in their technical characteristics.<sup>3</sup> The standard was developed as a result of the San Pedro Bay Port Complex's Technology Advancement Program (TAP). According to Caswell, "Once it can be shown that [a solution] can be done feasibly, rulemaking can come in behind and make sure it is standardized." This is a typical example of soft law, which are legal instruments that are not binding, as they persuade vessel owners and port authorities to follow a universal standard. Additional and/or alternative requirements can be imposed by national administrations or the authorities within whose jurisdiction the ship is intended to operate and/or by the owners or authorities responsible for a shore supply or distribution system.

2 Faculty of Maritime Studies University of Rijeka, 'Regulations in force and certifications' (European Regional Development Fund, 31 December 2021) 5 available at [https://www.italy-croatia.eu/documents/300761/0/4.3\\_Regulations+in+force+and+certifications\\_final.pdf/8e47ca16-470f-1c8e-3004-5504c1f21c3c?t=1650614113790](https://www.italy-croatia.eu/documents/300761/0/4.3_Regulations+in+force+and+certifications_final.pdf/8e47ca16-470f-1c8e-3004-5504c1f21c3c?t=1650614113790)

3 IEC/IEEE International Standard- Utility connections in port- Part 1: High Voltage shore connection (HVSV)-General requirements available at <https://standards.ieee.org/ieee/80005-1/5835/>

The subsea cable industry can consider setting their own standards that encourages operators to adopt sustainable technologies and practices. There are many companies that already have vessels equipped with shore power, including Alcatel Submarine Networks, Global Marine Systems, IT International Telecom, and Orange Marine. "It is always our preference to be on shore power in port, especially when sitting in standby for longer periods of time," says Paul Hebert, Marine Technical Manager at IT International Telecom. However, this is not yet standardized across the industry, and even in the many ports that have shore power available, cable ships still may not have access to shore-powered berths.

#### REGULATION 2: EU DIRECTIVE 2014/ 94 AND ALTERNATIVE ENERGY

The 2014 EU Directive on AFI calls upon its Member States to establish national policy frameworks outlining their national targets and actions for the development of the market for alternative fuels.<sup>4</sup> Member States were required to submit a progress report in November 2019, and complemented

4 Directive 2014/94/EU of the European Parliament and the Council on the deployment of alternative fuels infrastructure available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0094>

by additional reports every three years thereafter. Since the port authorities alone do not have much influence over sustainability initiatives, the Directive recognizes the involvement of private actors such as ship owners and terminal operators (in the case of landlord ports where the port real estate is leased to terminal operators) to be consulted when implementing regulatory and non-regulatory incentives and measures for compliance with this Directive. In some cases, port authorities form partnerships with their tenants to reach sustainability targets by using concession agreements. The Directive also calls for a core network of LNG refueling points at maritime and inland ports to be available at least by the end of 2025 and 2030, respectively.<sup>5</sup>

Financial support is available from the European Union for building new technologies and innovation for decarbonization of transport, especially for the subsea industry as it exploits the synergies between three priority sectors covered by another regulation<sup>6</sup>, namely transport, energy and telecommunications. Marine operators can find financial support for sustainable technologies through programs like the TAP in the San Pedro Bay Complex. The Port Authority of New York and New Jersey provides financial incentives for operators using the port to make changes to their fuel use, engine type, and other infrastructural enhancements. The subsea industry can register their boats into the Environmental Ship Index to enhance performance, minimize emissions, and pay less money

<sup>5</sup> *ibid.*

<sup>6</sup> EU Regulation No.1316/2013 of the European Parliament and of the Council of 11 December 2013, establishing the Connecting Europe Facility, available at [https://ec.europa.eu/inea/sites/default/files/download/legal\\_framework/regulation\\_13162013\\_cef.pdf](https://ec.europa.eu/inea/sites/default/files/download/legal_framework/regulation_13162013_cef.pdf)

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when calling at the Port. Authorities are invested in building strong partnerships with vessel operators because they want their business.

Building partnerships with ports can help our industry's marine vessels be more sustainable in ways that are beneficial for both parties. "The key to success," observes Bruce Neilson-Watts, "is ensuring all stakeholders communicate their needs/wants, port owners to communicate their future green energy roadmap as this assists ship owners to make more informed decisions on newer propulsion technology." Communication is essential. "Where possible we want to avoid port owners investing in fuelling infrastructure that is not aligned with shipowners future vessel investment plans."

Unfortunately, the current efforts and progress by Member States under the Directive is not sufficient to catalyze a full transition. The European Commission's assessment of Member State reports reveal that further action needs to be taken to reach their goals. Data availability on the uptake of onshore power supply for ships at berth is also limited.<sup>7</sup> There is

<sup>7</sup> Report from the Commission to the European Parliament and the Council on the application of Directive 2014/94/EU on the deployment of alternative fuels infrastructure available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0103&from=EN>.

no detailed and binding methodology for Member States to calculate targets and adopt measures. "Even with standards in mind, you almost always have to account for special solutions that follow the needs of the vessel," shares Valter Selen, the European Sea Ports Organization's (ESPO) Senior Policy Advisor for Sustainable Development. The level of ambition in target setting and policies to support it varies greatly among Member States. For example, Spain reported that it has 2 shore-side electricity supply points and expected to have 45 more in 2020.<sup>8</sup> Its national policy framework for LNG supply points for ships and ferries have already been accomplished 100%. This is not the case with many other Member States.

The Directive has shortcomings, but they provide marine cable operators a few things to consider: electricity supply, port traffic, and grid capacity. In response to these shortcomings, the European Parliament has proposed legislation to set binding targets for electricity supply for vessels

<sup>8</sup> European Commission Working Document, 'Updated Detailed Assessment of the Member States Implementation Reports on the National Policy Framework for the development of the market as regards alternative fuels in the transport sector and the deployment of the relevant infrastructure implementation of Art 10 (3) of Directive 2014/94/EU' (Brussels 16 February SWD 2022 33 final Part 3/4) 260.

in ports. Ship carriers working with the subsea cable industry should think about how they can work with ports that enable them to use shore power. As this form of alternative energy becomes increasingly adopted, ports will get busier, so ships should plan accordingly. This is why ESPO proposes to define the scope of the shore-side electricity supply based on a minimum level of traffic per terminal instead of per port.<sup>9</sup> This will encourage more vessels to adapt corresponding shore power technology over time. At the same time, we should remember that as ships become increasingly dependent on the grid, that will increase the strain on the cities these ports are located in. ESPO predicts that the EU will need at least fifteen times the current grid capacity available to meet the requirements set by the commission. “If you don’t know what demands you have,” Selen says. “Whether they will be using OPS or another solution, it’s difficult to install something that is future proof.”

### REGULATION #3: CALIFORNIA’S AB REGULATION AND CO2 EMISSIONS

The third regulation we examined was California’s AB Regulation. This is a landmark legislation with some scholars and industry experts calling it one of the most successful pieces of legislation in the US concerning statewide efforts to reduce greenhouse gas emissions.<sup>10</sup> While the regulation affects container ships, passenger ships, and refrigerated-car-

go ships, the law affects the subsea cable industry because it will be re-evaluated to include smaller fleets and additional vessel types in the future.<sup>11</sup> It was approved in 2007 with compliance requirements beginning in 2014 and was later updated in 2020.<sup>12</sup> As of 2020, it resulted in a decrease of 80% of emissions from container, cargo, and cruise vessels.<sup>13</sup> This regulation seeks to reduce emissions from auxiliary engines at berth. While the EU Directive targets CO2 emissions in particular, the state law requires terminal operators to provide shore power, allowing the use of other low sulfur emitting technologies, like use of marine gas oil or scrubber sys-

and emission control strategy operators have shared obligations under the California regulation for reducing at berth emissions, depending on who is the agent responsible for installing any necessary equipment onboard a vessel.<sup>15</sup> This is because most port authorities are not regulatory bodies but landlords who rent sections of the port property to operators. Terminals and ports in general will be responsible for installing shore-side emissions control equipment and/or infrastructure, while vessel operators are responsible for installing any necessary equipment onboard a vessel.<sup>16</sup> Instead of placing the responsibility on ports, the State of California created

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tems.<sup>14</sup> Subsea cable vessels that want to dock in California ports will need to comply with this law, but following it will also help reduce our industry’s emissions.

Interestingly, vessel operators, terminal operators, port authorities,

the California Air Resources Board (CARB) to enforce and advance climate regulation. The Regulation has strong penalties which are essential for its enforcement. Pursuant to the Health and Safety Code and the 2020 amendment to the AB Regulation, each failure to meet any requirement of California’s AB Regulation constitutes a single, separate violation, amounting to a maximum of \$37,500

9 European Sea Ports Organisation, ‘Position of the ESPO on the Proposal for Alternative Fuels Infrastructure Regulation1 (COM 2021 559) 2.

10 Cassandra B. Drotman, Santa Rosa, Raymond H. Huff, Camille Q. Le, ‘A Look at CARB’s AB32 GHG Programs, from Early Action to Today’ (AWMA’s 114th Annual Conference & Exhibition Virtual Conference) June 14 – June 17, 2021 Extended Abstract # 984215) 12.

11 California Air Resources Board <https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation/about>

12 Updated in 2020, appearing in sections 93130 through 93190.22 of Title 17, California Code of Regulations.

13 Control Measure for Ocean-Going Vessels at Berth available at <https://ww2.arb.ca.gov/resources/factsheets/control-measure-ocean-going-vessels-berth>

14 Zis, T. (2019). Prospects of cold ironing as an emissions reduction option. Transportation Research. Part A: Policy & Practice, 119, 82-95. <https://doi.org/10.1016/j.tra.2018.11.003>

15 California Air Resources Board, ‘At Berth Frequently Asked Questions’ (2021) 3 available at <https://ww2.arb.ca.gov/sites/default/files/2021-11/TTD21-272%20At%20Berth%20FAQs.pdf>

16 *ibid*.

for “each action”. This regulation exemplifies a hard binding law that makes the maximum impact as it is followed by penalty for non-compliance. Ports teach us that without regulatory agencies to ensure compliance, there is no incentive for the vessels that install, repair, and maintain our cables to be more aware of their carbon footprint. Because our vessels are one of the most significant carbon emitters in our industry, setting standards for sustainable practices and infrastructures can have a significant impact on our environment.

## IS LAW THE RIGHT INSTRUMENT FOR CHANGE?

The subsea cable industry could benefit from regulation that enables sustainable practices across the sector. Working with sustainable ports will encourage us to adapt the technologies that can decrease emissions while still effectively maintaining our cables. Good regulation maximizes our capacity to support decarbonization efforts across our chain of production.

A comparative analysis of these three pieces of legislation reiterates that law, in whatever form, can be conducive in achieving climate targets. According to a 2019 French news article, three ferries with 12-hour daily stopovers between Marseille and the Island of Beauty saved two to four tons of diesel per ship by switching to electrical power. This strategy alone resulted in a 30% reduction in fuel consumption.<sup>17</sup> This is driven by regulations which since 2010 have been strengthening requirements in terms of emissions linked to transport.

<sup>17</sup> Translated from a French article, “Electricity connection to the ferry dock is developing in the port of Marseille Fos”, by Paul Molga, January 2018.

## Rather than replacing a fleet, the subsea cable industry can leverage already existing laws to improve their sustainability practices.

It is critical to implement environmental standards and legislation for all green technology. It provides a way to future-proof further development towards alternative fuels and energy carriers.<sup>18</sup> Moreover, coordinated policy frameworks go a long way in establishing long-term certainty and uniformity for ship owners and operators, thereby providing greener pastures for infrastructure investments with confidence. Rather than replacing a fleet, the subsea cable industry can leverage already existing laws to improve their sustainability practices. We are in a position to encourage and incentivize our operators to work with green ports and to set their own emissions standards with ports’ support.

Outside of regulatory obligation, there is less motivation for vessel owners to adopt alternative fuel technologies. Therefore, a concerted, uniform practice across ports can go a long way in increasing emissions reductions and help reach sustainability targets even sooner. Our dependence on regulation also suggests that we address sustainability as a multi-pronged approach, adapting multiple strategies simultaneously to minimize our emissions. While regulation helps

<sup>18</sup> Directive 2014/94/EU of the European Parliament and the Council on the deployment of alternative fuels infrastructure available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0094>

universalize a single procedure to be more sustainable, it is crucial to act now in setting regulation rather than waiting for it to be determined for us. Cable ships can capitalize on port infrastructure to enhance their sustainability goodwill among their customers by investing in technologies that complement the available port infrastructure. There may not be a single solution to decarbonize the Internet, but if our marine vessels work with these ports it will be a significant actionable step toward that end.

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