



Introduction to
**Sustainability
in Marinas**

Innovamarina

2nd Edition

Introduction to Sustainability in Marinas

Innovamarina

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2nd Edition

Introduction

With contributions from many of the veritable authorities in this industry, this anthology aims to provide some helpful orientation to marina staff looking to develop their sustainability strategies.

The Introduction approaches sustainability from a number of different angles, ranging from responsible design and environmental stewardship to matters of diversity, equality and inclusion. There's of course a piece on alternative propulsion infrastructure and a look at how smart destination integration could benefit marinas in the future.

Sincere thanks to everyone who generously contributed their time and expertise; once again a delightful example of the inspiring culture of collaboration we are fortunate to enjoy amongst this community.

All comments and suggestions for corrections or improvements are gratefully received.

Best wishes,

Melanie Symes

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Disclaimer:

This document was prepared by Melanie Symes with personal contributions from Elizabeth Dumergue, José Luís Fayos, Marcelo Sabanes, Idan Cohen, Esteban L. Biondi, Philip Easthill, Patrick Hemp, and Dr. Dominique Durand, but the final product does not necessarily reflect the opinions or positions held by the above-named. The contributions of the above individuals do not represent the companies or entities of their affiliations. No responsibility is assumed by the said individuals for the use of the information contained in this publication.

01 Sustainable Design

SDG - 14, 11, 13



Esteban L. Biondi

Working with Nature (WwN) in marina design: Maximising environmental, social, and economic benefits, and resilience

Best practice in marina design maximises the value of the project in all dimensions, far beyond just meeting the physical infrastructure and equipment goals of the project at the lowest cost. Sustainable marina facilities should provide net positive outcomes at multiple levels, through careful consideration of natural processes, ecosystem functions, stakeholder engagement, and through implementation of strategies that maximise opportunities for navigation and nature, create value on multiple dimensions and achieving co-benefits, flexibility, and resilience.

The WwN philosophy proposed by PIANC advocates the following steps:

1. Establish project need and objectives
2. Understand the environment
3. Make meaningful use of stakeholder engagement; identify win-win options
4. Prepare project proposals/design to benefit navigation and nature
5. Monitor and adapt

There are numerous ways in which WwN can be implemented for marina projects. WwN assumes the use of best practices in market studies, comprehensive master planning (life cycle flexibility), engineering studies of the physical system, as well as environmental understanding for the proactive inclusion of ecological features and maximising social benefits.

The proposed approach allows for “asking the right questions”, unveiling value and developing optimal innovative solutions.

Environmental Dimension of Sustainable Marina Design

Once the environment is understood, planning and design best practice requires protecting natural (physical and ecological) functions and finding opportunities to enhance the ecosystem benefits of the project by proactively including ecological features in the marina design, alongside the other marina development goals.

Marina landscape and waterscape ecological features

Environmental features can be part of landscape aesthetic design, complement pedestrian walkways, contribute to guest amenities, be included in recreational spaces, or be integral to educational opportunities. Environmental design can also result in enhancing a sense of place that mirrors the surrounding natural and cultural environment, generating areas where local community members interact with guests.

First: Do No Harm

Typical development impacts that WwN can avoid, minimise, and mitigate:

- Ecosystem damage or habitat loss (coral reefs, mangroves, seagrass beds, oyster beds, mud flats, coastal lagoons, salt ponds, dune ecosystems, etc.).
- Disruption of physical dynamics of coastal, lagoon, estuarine, delta, river, or lake systems, such as circulation and mixing patterns, sediment transport, salinity, etc.
- Sediment transport changes (scouring, erosion, or deposition) and impact project performance or ecosystem functions.
- Water quality degradation (increased concentration of pollutants, suspended sediment, and nutrient loading).

Proactive ecological enhancements

Types of design solutions that emerge by embracing this approach include natural and nature-based features (NNBF) and nature-based solutions (NbS):

- protecting and leveraging engineering functions of existing natural systems (islands, marshland, mangroves, coral reefs) as part of the marina project, such as protection from extreme weather events or carbon storage.
- designing new or improved artificial reefs, islands, and coastal wetlands to provide additional coastal protection and climate adaptation functions.
- using ecosystem functions in stormwater management, landscape and utilities infrastructure design.

¹ PIANC Working with Nature Position Paper <https://www.pianc.org/working-with-nature>

² PIANC RecCom WG 148: ‘Guidelines for Sustainable Recreational Navigation Infrastructure’ (2023) <https://www.pianc.org/publications/recom/wg148>

- ensuring marina basin water circulation to reduce pollutant loading and create water quality adequate for marine life in the marina.
- Including living shorelines or altering the surface / texture of in-water structures to enhance aquatic habitats.

By adopting nature-based solutions, marinas can create more sustainable and resilient environments, enhance biodiversity, adapt to climate change, and provide a better experience for boaters and visitors. These solutions not only offer ecological benefits but also contribute to cost savings, operational efficiency, aesthetic value, and long-term viability for marina operations.

Typical environmental design solutions with potential economic benefits include:

- The use of sloped vegetated shorelines or the creation of landscaped stormwater retention and filtering areas with habitat ecological functions.
- Retaining waterfront areas as project features, either via protection or recreating a living shoreline, reduces construction costs.
- Rock revetments combined with native vegetation are more economical than vertical walls, also providing a cost-effective solution to sea level rise.
- Creating a vegetated intertidal flat is less expensive than reclaiming to a safe construction elevation and landscaping, especially where fill is costly. The “lost” area that results from reducing the reclamation surface area becomes a landscape design feature.
- Small islands designed to include intertidal shorelines, lagoons, and rocky features can use dredged material and provide wave protection, habitat opportunities and enhanced landscape value.

The Social Dimension of Sustainable Marina Design

Best practice in marina design seeks a balanced urban integration that optimises community benefits and avoids conflicts. Physical planning can enhance the visitor authentic experience and honour local heritage, while creating community recreation areas and facilities for economic activities by local businesses.

Social Sustainability and the Guest Experience

One pathway to sustainability is for the local population to benefit directly from economic activity by enhancing the authenticity of the marina as a destination with a thriving culture. Economic benefits may be achieved when the local community is involved in the provision of high-value experiences, in addition to other support services. Visitors will recognise, understand, and respect the local culture and community, making meaningful positive economic impact.

Experience Economy vs. basic community needs

The best human resources for memorable, authentic, profound guest experiences are in the local community. However, in many places, the community members are not ready to provide formal services at the necessary level. For maximum local authenticity potential, the marina developer and local governments can collaborate with the local communities by supporting:

- Community infrastructure, services (water, sewage, waste removal), and governance
- Education, including language, technical and business programmes
- Small business support and business incubators
- Training
- Financing

Types of businesses and programmes emerging from this approach include:

- Eco-tour operators licensed to access marine protected areas
- Sea-to-table programmes for sustainable fishing
- Experience retailers, art workshops, traditional certified handcraft markets
- Water sport operators

A similar approach can be applied to a broader range of Blue Economy businesses, including technical services for beach erosion monitoring, reef restoration, coral nurseries, mangrove restoration, etc.

Design for climate change adaptation and mitigation

Given the multiple expected impacts of climate change, both adaptation and mitigation considerations are inherent to the best practice in marina design. Climate adaptation functions contribute to economic sustainability.

Marina developers, owners, investors, and lenders must incorporate climate considerations in the development and redevelopment of projects, as they will be required in the future to document and disclose the financial impacts of climate change (TCFD).

Climate Adaptation – design for physical impacts of climate change

Climate change will cause increasing physical impacts on coastal facilities, including marinas. Despite numerous uncertainties regarding storm frequency and intensity, future-proofing engineering design can be based on the certainty that sea level is rising at an increasingly accelerated rate. This is especially significant because the design and development regulatory framework (including building codes and engineering standards) in most countries has not yet been updated to account for climate change.

Climate adaptation considerations may include:

- Studying storm impacts and tidal flooding vulnerability under different future sea level rise conditions
- Designing wave protection and shoreline structures to withstand a certain amount of sea level rise, with the necessary features to facilitate future adaptation.
- Land development and land use regulations to accommodate future needs for setbacks and shoreline structures to adapt to sea level rise, including fill elevations, areas for future structures and easements for construction.
- Space allocation and construction access for breakwater future structural adaptation needs.

Climate Mitigation – design GHG emissions reductions and capture

Climate change is caused by anthropogenic GHG emissions, so incentives and regulations are being implemented to eliminate or significantly reduce GHG emissions and enhance opportunities for GHG capture and storage (decarbonisation).

From the point of view of GHG emissions accounting, the standard classification of emissions includes:

- **Scope 1 emissions** stem from sources that an organisation owns or controls directly, such as burning fossil fuel by marina-owned vehicles and generators.
- **Scope 2 emissions** are caused indirectly when energy purchased and used by the company is produced, i.e., electricity purchased to run marina offices and workshops.
- **Scope 3 emissions** - are not produced by the marina itself, nor the result of activities from assets owned or controlled by them, but instead generated by parties within its value chain – for example, fossil fuel sold to boaters.

Marinas can make significant contributions to Scope 3 reductions.

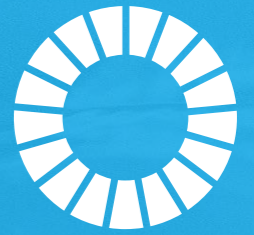
The recreational boating industry will be making significant changes to vessel propulsion systems to facilitate decarbonisation. Marina facilities should thus support those efforts by providing relevant necessary infrastructure, whether plug-in hybrid, full-electric, hydrogen, methanol, drop-in low emission fuels, etc).

Scope 1 and 2 reductions can be achieved by marina utility design and equipment that is focused on energy-efficiency and decarbonization technological solutions.

Marina design should also incorporate project features that provide greenhouse gas (GHG) sequestration, such as wetland ecosystems, which can also provide other co-benefits.

02

Marinas & the SDGs



Elizabeth Dumergue

Applying the Sustainable Development Goals in Marinas

Back in 2015 all United Nations Member States adopted the “2030 Agenda for Sustainable Development”. At the centre of this are 17 Sustainable Development Goals (SDGs) that provide a framework for countries to increase peace and prosperity both now and in the future. Although the SDGs are primarily aimed at what steps governments can take, there are many things that we can do both at an individual level and at a business level to contribute to a better world.

Below are some of the ways that marinas can make a positive contribution to the SDGs.

Goal 5. Achieve gender equality and empower all women and girls.

Target 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.

Indicator 5.5.2 Proportion of women in managerial positions

What you can do:

- Make sure that you have women in senior and managerial positions.
- Make sure that women are able to develop their careers while working at your organisation.
- If you have a Board of Advisory Committee, make sure that it includes members who are women.

Goal 6. Ensure availability and sustainable management of water and sanitation for all

Target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

Indicator 6.3.1 Proportion of domestic and industrial wastewater flows safely treated.

Indicator 6.3.2 Proportion of bodies of water with good ambient water quality.

What you can do:

- Assess your organisation's water footprint. What steps can you take to lower this?
- Make sure you have appropriate measures in place to prevent water pollution.

Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

Indicator 6.4.1 Change in water-use efficient over time.

Indicator 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources.

What you can do:

- Take steps to achieve/ improve water efficiency, including making sure that water isn't wasted. Fix leaky pipes and other infrastructure.
- Make sure that you have appropriate waste and hazardous materials management so that surface and groundwater are not contaminated.
- Take steps to minimise water use where possible.
- Recycle your waste water if possible.

Target 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

Indicator 6.5.1 Degree of integrated water resources management

What you can do:

- Make sure that you have appropriate water resource management in place. This should be reviewed periodically to assess if improvements can be made.

Target 6.6 By 2020, protect and restore water-related ecosystems, including mountains,

forests, wetlands, rivers, aquifers and lakes.

Indicator 6.6.1 Change in the extent of water-related ecosystems over time

What you can do:

- Assess what steps you can take to improve the water-related ecosystem that you use. Are you drawing freshwater from the local ecosystem? If so, what are you doing to ensure that the ecosystem does not suffer as a result, and what steps are you taking to make sure that the ecosystem improves?

Goal 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Target 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

Indicator 8.5.1 Average hourly earnings of employees, by sex, age, occupation and persons with disabilities.

What you can do:

- Conduct a comprehensive pay review and determine whether or not there are any discrepancies in pay between those who with disabilities and those without, or gender pay differences, or other pay differences that should not be present. Check like for like. For instance, determine what employees' hourly rates or pay are, and then compare those. (That is, don't compare the pay of someone who works part-time with someone who works full-time without adjusting the pay rates accordingly. Working out what an employee's hourly rate of pay is may be the easiest way to do this.) If there are any discrepancies, correct the pay rates so that these discrepancies are removed.

Target 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

Indicator 8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status.

Indicator 8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status.

What you can do:

- Create and implement a Code of Conduct which aims to prevent forced labour, child labour, and modern slavery in your supply chains.
- Make sure you have appropriate health and safety policies and procedures in place.
- Monitor major and minor health and safety incidents.
- Reduce the risk of health and safety incidents.
- Remember to think about the mental health of your workers as well as their physical health.

Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable.

Target 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

Indicator 11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities.

What you can do:

- If your marina is used by public transport (e.g. water taxis etc.), review how accessible these are. Where not fully accessible, take steps to increase accessibility.

Goal 12 Ensure sustainable consumption and production patterns.

Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

Indicator 12.2.1 Material footprint, material footprint per capita, and material footprint per GDP

What you can do:

- Track your hazardous waste throughout your business lifecycle (i.e. at construction, during projects, when decommissioning infrastructure).
- Aim to have zero hazardous waste.
- Engage with your suppliers so that you reduce the amount of waste produced on site (e.g. when materials and supplies are delivered).
- Increase recycling.
- Reduce waste production.

- Monitor your ecological impacts and aim to reduce this where possible.
- Take steps to integrate a circular economic model into your business practices.
- Buy your materials from responsible suppliers.
- Monitor and assess your supply chain to manage the risks associated with the use of materials that are in short supply.
- Instal infrastructure that produces sustainable, renewable electricity e.g. wind power, solar panels etc.

Goal 13 Take urgent action to combat climate change and its impacts.

Target 13.2 Integrate climate change measures into national policies, strategies and planning.

Indicator 13.2.2 Total greenhouse gas emissions per year.

What you can do:

- Monitor your greenhouse gas (GHG) emissions.
- Aim to reduce these year by year. This could be by doing things such as reducing your energy consumption, by being more energy efficient, and/or by sourcing your energy needs from renewable sources.
- Create a roadmap to net zero.
- Review the roadmap at least every three years.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Target 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

Indicator 14.1.1 (a) Index of coastal eutrophication; and (b) plastic debris density

What you can do:

- Measure and assess the level of eutrophication. (Eutrophication occurs when there are excessive nutrients in a body of water. This normally happens if there is a runoff from land-based activities. Eutrophication can cause excessive growth such as algal blooms, which in turn, can adversely affect marine animals.) Take steps to ensure that runoff from the land is reduced or eliminated.
- Measure the density of plastic debris in the water and coastal region used by the marina. Take steps to reduce or eliminate future plastic pollution, and remove any current plastic pollution.

Target 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

Indicator 14.2.1 Number of countries using ecosystem-based approaches to managing marine areas.

What you can do:

- Develop an ecosystem-based approach to managing the marine area where your marina is located.
- If your country does not have an ecosystem-based approach to managing its marine areas, lobbying to establish one.

Goal 15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Target 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.

Indicator 15.3.1 Proportion of land that is degraded over total land area.

What you can do:

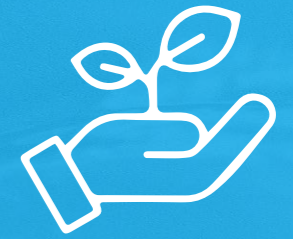
- Measure the amount of land around your marina that has degraded soil or has been affected by drought or floods. Take steps to improve the environment, and then calculate the area that has been improved.

These are just some of the steps that marina operators can take to align with the Sustainable Development Goals. Tracking your progress annually will help you make sure that you stay on track, and it will help you to see what improvements you have made.

More information about the 17 UN Sustainable Development Goals can be found here: <https://sdgs.un.org/goals>

03

Environmental certification



Commitments to sustainability

Environmental certification can provide multiple benefits for marinas, from demonstrating a proven commitment to sustainability and thus improving brand visibility, to improving governance and efficiency. Perhaps more importantly, the certification or award process can help marinas build capacity in terms of developing an environmental stewardship role within their wider community, with a potentially positive impact on marine ecosystems and wildlife.

From a visitor perspective, this type of recognition can help to attract environmentally conscious boaters and visitors who prize sustainable tourism and who prefer to support businesses that prioritise these values.

This article looks briefly at three different options, two of which are certification systems and the other a voluntary award.



International Blue Flag Director Johann Durand shared his perspective on why and how the Blue Flag can help marinas.

“Firstly, this is an international award and well-recognised in the countries in which it is present. It offers a reliability of the same minimum standards across the globe, employs a multi-stakeholder approach and provides a holistic framework to help staff and management to implement sustainability in a way that is both meaningful and comprehensible for all concerned, including local communities.

To ensure a high qualitative level, each marina is visited at least once a year by a national representative, and we rely on advice from ministers of tourism education and the

environment, together with marina experts at national level, whilst at international level, we are fortunate to be able to be guided by the UN Environment Programme, ICOMIA and the UNWTO, with representatives on the international jury.

A popular reflection is that the Blue Flag criteria presents a high rung on the ladder for those starting out. We address accessibility and applicability in terms of achieving the award by offering workshops and guidance, permitting national organisations to add or adapt criteria in accordance with local regulatory requirements and assisting countries with fewer resources with advice on attracting funding and further support.

The Blue Flag is in constant evolution; indeed, we are preparing now for new criteria, including climate actions, biodiversity protection and combatting various types of pollution. We are also reviewing the three basic pillars of accessibility, safety, and education. With a launch date towards the end of 2025, this will of course involve an adaptation period and full support from national organisations.

Find out more at blueflag.global



Ports Propres is a successful European certification system for marinas, which started in the south of France and is progressively gaining ground up the Atlantic coast. One of its most recent additions is the “Ports Propres Actifs en Biodiversité” programme, that encourages marinas to adopt measures that support biodiversity conservation and to raise awareness about the importance of biodiversity in their immediate environments.

At the head of this organisation, Veronique Turrel Clément took some time to explain a little more about the rationale behind the programme.

Ports Propres is currently the only certification system of its kind in France. It requires a high level of commitment from marinas and is objectively controlled by a national standards agency via an annual inspection. The process involves the entire operational team, on the basis that each member has a role to play, and marinas are offered expert assistance and training on a range of topics.

Matters considered within the Ports Propres scheme include water and energy saving, the control of all types of pollution generated within the marina or affecting the marina via outside sources and creating environmental awareness to encourage berth-holder engagement. An annual improvement plan serves to continuously advance sustainability practices in marinas.

Within both programmes, to ensure that marinas respond to the unique requirements of their locality, each marina starts the process with a diagnostic assessment, where in the case of the Actifs en Biodiversité action plan, this looks at local biodiversity, affording a much better understanding of the local flora and fauna. This work encourages ports to identify and conserve natural habitats within their facilities. It also promotes the restoration and enhancement of degraded habitats to improve their biodiversity value.

For more information, visit: ports-propres.org



The Yacht Harbour Association (TYHA) launched the “Clean Marina” programme in 2021. Based on established Clean Marina principles in use in the US and Australia, this is separate to their Gold Anchor scheme, although both certifications can be assessed at the same time by Certified Marina Managers. TYHA’s geographic scope covers marinas based in the UK, Europe and the Middle East.

Jon White, TYHA’s General Manager, emphasises that at the heart of Clean Marinas is the simple need for marinas to get the basics right in terms of protecting the watercourse. Without a rudimentary level of environmental stewardship, it doesn’t make sense to advance to other sustainability issues. Achieving clean waters includes incorporating effective use of black, grey and bilge water pump out facilities, filtering boat washdown facilities in yards and ensuring that drains are properly directed and marked.

Naturally these processes involve the active participation of both staff and berth-holders, and so advice covers how to understand requirements and habits, – particularly in terms of pump-out practices, - how best to communicate the importance of clean waters with berth-holders and register the level of engagement.

Removing other threats of water pollution encompasses comprehensive waste management, with suitable segregation and certified treatment services.

TYHA’s aspires to strengthen an open sharing culture around good practice, whether directly amongst marina teams, via member magazines, or through the peer review process. To help develop a better understanding, this includes generating and distributing expert content from pertinent suppliers or other professionals.

To learn more about The Yacht Harbour Association, visit their website: tyha.co.uk

04

Water

SDG - 6, 12, 14



Marcelo Sabanes – SES Efficiency

Sustainable use and management in marinas

Water, as a vital and scarce resource in many areas, needs to be safeguarded by optimising its consumption in each and every sector of an organisation that uses it in the production of goods and services. Marinas are no stranger to this responsibility and any effort towards a more sustainable use and management of resources must include water.

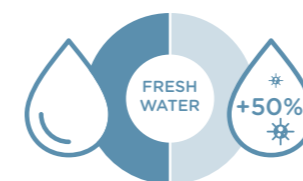
The platform of services available in marinas make the sustainable use and management of water one of the fundamental pillars to work on in any effort to improve the overall sustainability of the site and the associated services and facilities, in order to reduce its impact.

The decisions, processes and equipment employed to access, use and manage water in the daily activity of a marina and the services offered to its users, will determine the degree of sustainability and, therefore, of responsibility related to generating a negative or positive impact, which goes beyond the perimeter of the establishment and can affect or benefit the entire community, island or territory in which it operates.

In this context, one of the first elements to consider is the location of the marina itself, where facilities are integrated into a pre-existing ecosystem with characteristics that must be taken into account, such as the surrounding marine ecosystem with its flora and fauna, the predominant currents, the wind, etc., all of which are relevant when designing the service infrastructure to avoid generating a negative impact on the quality of the water, the natural environment and its biodiversity.

Some of the main factors to bear in mind for sustainable water management

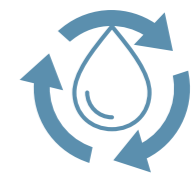
- **Vessel cleaning and maintenance:** a routine task where the water used in the process contaminated by oils, paints and grease must follow strict procedures to prevent them from entering the water or nearby soils. The choice of work area, its correct equipment for proper handling, separation and subsequent treatment of waste as well as the selection of cleaning products to be used (biodegradable and phosphate-free among other characteristics) are key at this point to maintain water quality, and therefore the health of the entire ecosystem.
- **Rainwater harvesting and reuse:** taking into account that the marina occupies a space that previously had a natural runoff system, the infrastructure must foresee or develop a system for harvesting, channelling and reuse of rainwater both at roof level, but also at ground level (terraces) and especially in yards, in order to avoid pollutant materials ending up in the marine ecosystem.
- **Management of refuelling actions:** refuelling actions often result in spills that pollute the marine environment. For example, automatic shut-off nozzles and air/fuel separators on air vents or internal fuel tank stems can reduce the amount of fuel spilled into the water during refuelling.
- **Sewage:** Every marina should have a system for the collection, temporary storage/treatment and/or proper disposal of sewage. Toilets, discharge stations and pump-out stations are essential for this purpose and should be easily accessible and properly marked to avoid highly polluting discharges.



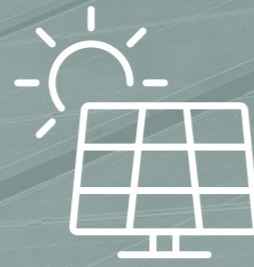
Less than 1.5% of the world's freshwater is accessible, and of that, over half is polluted!



Water: a valuable resource, with an excessively high potabilisation cost in island environments.



Sustainable water management reduces costs and helps to improve the visitor experience in marinas.



José Luís Fayos – Global Management Consultoria

A major challenge for the nautical and maritime sector

Marinas are facing an extraordinary opportunity to adapt their energy management models towards greater efficiency and a greater role for renewable energies, in line with the European Green Pact and the Fit for 55 legislative package.

Of all the available technologies, photovoltaics is growing in importance and has the potential to increase development in the sector.

Other technologies such as green hydrogen, geothermal and tidal have more distant implementation horizons, but are of no less interest.

The electrification of recreational craft, in its transition from internal combustion engines to electric motors, represents an increase in the energy needs of port facilities, making it all the more important to improve efficiency within these facilities and incorporate renewable sources. This transition will depend very much on a number of factors, making it hard to clearly predict which model or system is most likely to be more generally adopted in the interests of attaining climate neutrality¹.

Port facilities that are close to or linked to commercial ports will have greater opportunities for incorporating renewable energies from a supply source, and in fact important projects are already being developed along these lines, such as the one known as [A Coruña Green Port](#)

Another initiative of interest is the [Wave Energy Converter](#), a project supported by the Port of Valencia. Amongst other services, this system is expected to cover the lighting needs of Valencia Marina, a facility with a capacity of over 800 berths.

Ideas/recommendations:

- Measure your carbon footprint to find out how energy is used in daily operations (including suppliers and visitors).
- Develop good energy-saving practices (buying local products, promoting alternative transport options, etc.).
- Consult with local energy suppliers to contract green energy.
- Prepare for the transition to electric boats and port vehicles.
- Involve all stakeholders in the marina in energy saving practices.

¹ Climate neutrality refers to the idea that net greenhouse gas emissions are balanced and equal to (or less than) those removed through the planet's natural absorption.

 Resources:

[Roadmap for the Decarbonisation of the European Recreational Marine Craft Sector \(The Carbon Trust, 2021\)](#)

[EU Blue Economy Report \(European Commission, Directorate-General for Maritime Affairs and Fisheries, Addamo, A., Calvo Santos, A., Guillén, J., et al., The EU blue economy report 2022,\)](#)



The pathway to the Blue Economy

Marinas are key to the promotion of the circular economy in the field of recreational boating, as boat repair and maintenance operations are carried out in their facilities, which generate significant amounts of waste. These operations have historically been carried out in a controlled manner and in accordance with the reference regulations, however, this is no longer sufficient, and waste policies at European level require the transition to the circular economy.

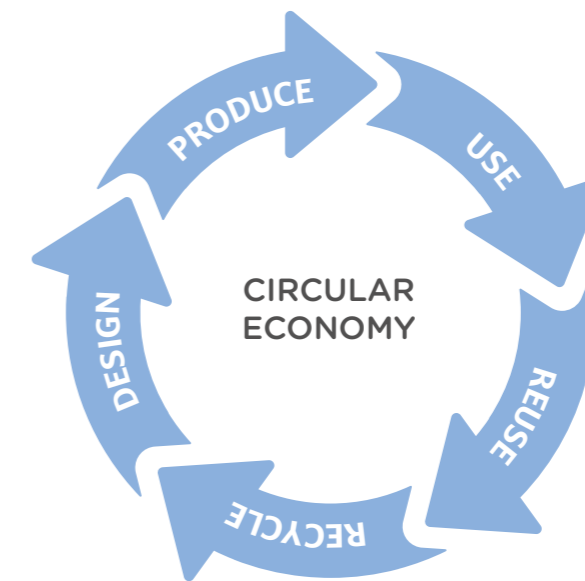
The nautical sector has always faced a great challenge to recycle the materials that are part of the boats at the end of their useful life. This is firstly due to the way in which they are so thoroughly glued together, but perhaps more important, since the vast majority of these are plastics or thermosetting polymers¹, and there are no technically or economically viable options for recycling them, meaning that quantities of boats end up in landfill.

However, this apparent constraint to making progress in advancing circular economy practices in marinas, is now being overcome thanks to the introduction of new resins on the market. Epoxy in particular, has characteristics that allow fibres and other structural elements to be recovered. This, together with the increased use of natural fibres, such as flax, hemp, jute - and even basalt - as alternatives to fibre-glass, contribute to improving the recyclability rates of boats.

Eco-design, reconceiving the way that things are built in order to either maintain them in the cycle or be able to deconstruct them more easily for use in other projects, lies at the centre of the circular economy philosophy and is also being employed now in boat construction. Another clear example of this in marinas are synthetic eco pontoons, made from recycled wood and recovered plastics.

💡 Ideas/recommendations:

- Promote good water and energy saving practices.
- Encourage knowledge-sharing workshops on repairing and reusing high-value items.
- Practice composting organic waste from gardening, household and commercial sources
- Encourage the purchase of items made from recycled materials.
- Promote second-hand markets (nautical clothing, boat accessories, etc.).
- Reduce single-use products as much as possible, especially those made of plastic.



¹Thermoset plastics are a type of polymer that can be heated and moulded only once; if heated again, they burn. These cross-linked polymers harden during formation and do not soften when heated, leaving them able to withstand high temperatures.

🔗 Resources:

[Ellen MacArthur Foundation](#)

[METS Trade: "How can marinas bring more circularity to the boating world?"](#)

07 Waste management

SDG - 6, 12, 13, 14



This action goes far beyond the typical containers for separating glass, paper and cardboard, plastics and aluminium, but should also include the management of hazardous and/or kitchen waste such as compostable organic waste, and the removal and correct treatment of all types of effluents, including grey, black and bilge waters. Some marinas even provide facilities to collect and manage marine debris from local or visiting boaters.

Naturally, customer engagement in these matters is essential. Take steps to consider how to best communicate the importance of maintaining clean marina facilities and using the available services responsibly.

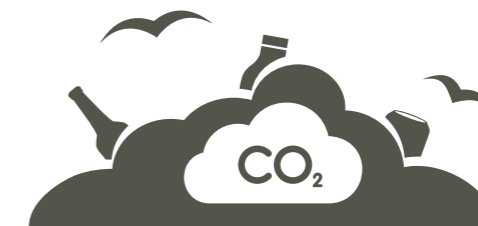
Marcelo Sabanes – SES Efficiency

As a specific contribution to sustainability and carbon neutrality

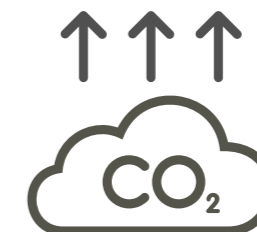
Our very existence and our consumption habits generate significant amounts of waste on a daily basis. Various technologies and services in practically all areas of the world already exist to manage waste separation at source, transformation, or recycling, with the main objective of reducing the volumes that end up in landfill. This waste, without the correct infrastructure or management processes, pollutes soil, air, and water, also emits a significant amount of greenhouse gases (GHG) that contribute to global warming.

Marinas, like all economic service activities, generate significant volumes of waste as part of their daily operations, many of which are classified as hazardous waste (fuel, antifouling, solvents, oil, paint, etc.), and it is the responsibility of these facilities to manage them properly in order to reduce their impact on the marine and coastal environment.

That said, it is important that the marina's infrastructure and equipment are prepared to facilitate and implement the first step in sustainable waste management, which is separation at source. From this separation of materials, the next step is to have a network of associated services that allow the highest degree of use, transformation or recyclability of the materials.



Between 1990 and 2005, global Greenhouse Gas (GHG) emissions generated by Municipal Solid Waste (MSW) deposited in landfills increased by approximately 12%.



In Spain alone, MSW in landfills generates almost 10 million tonnes of CO₂e, which is equivalent to the annual pollution of a car fleet of up to 3.51 million vehicles.

Equity, inclusion & diversity

 SDG - 4, 5, 10



Elizabeth Dumergue

Making marinas welcoming to all: equity, inclusion and diversity in marinas

It is well-known that the more inclusive and welcoming a workplace is, the better it is for business, but how do you implement this on a practical basis? Below are some top tips on your marina becoming more inclusive and welcoming.

- 1. Gap analysis.** You will need to review the marina's policies, procedures and processes to identify any challenges or inequalities that may exist. What barriers currently exist that could make it difficult for colleagues, customers, and the local community to do their job, access the services that you provide, or use the marina?
- 2. Policies.** Review and update the marina's existing policies and procedures to make sure that they promote equality, and inclusion. It is good practice to review policies at least every year or two (sooner if there has been a change in legislation that you need to implement). Policies and procedures should be reviewed through an equity, diversity and inclusion lens. If you are unsure about how to do this, there are trade associations, chambers of commerce, or charities that may be able to assist. At a minimum, you should review policies that relate to access, membership, and fees. In addition, you should also have in place policies to address anti-discrimination and anti-bullying.
- 3. Procedures.** Do you track differences across gender and/or race to ensure that you do not have a gender or ethnicity pay gap? Are you paying the same wage to staff for the same work regardless of race, gender or other protected characteristics? If not, take steps to correct any imbalance that may have developed over time. Procedures (not just those related to pay or HR) should be regularly reviewed.

- 4. Accessibility.** Review the physical environment in the marina. Are facilities accessible? For instance, are their wheelchair ramps and accessible toilets? What about the signage? Does this need to be updated to be more inclusive?
- 5. Training.** Review and update any training that you provide to staff. This should include things like health and safety, wellbeing in the workplace (e.g. looking after your mental health), and inclusion and diversity training. Provide colleagues with the tools that they need to reduce biases, and create a welcoming environment for everyone.
- 6. Community engagement.** Look around your marina: what groups from the local community are not represented, why is this, and what can you do to improve inclusion? Does the decision-making process involve a variety of voices? One way to increase community engagement is to involve individuals from a range of backgrounds. Perhaps you could set up an informal advisory board to ensure that the perspectives of a diverse community are heard. Think about how to encourage participation in boating and marine activities from groups that are traditionally underrepresented in such activities. You won't know what the barriers are to their participation until you listen to what they need.
- 7. Outreach.** Review which community groups you are currently interacting with and consider ways of widening this outreach. Schools, colleges, local organisations, marine charities, etc. are a good place to start.
- 8. Affordability.** Are there financial barriers to some members of the community accessing your marina's services? Review what steps you can take to address any financial barriers. This could include offering a range of membership options, discounts for students or low-income individuals, or proactively seeking sponsorship from local businesses to host inclusive events.
- 9. Culture.** The culture in the marina is very important. Review how you are promoting positive interactions among marina users. What cultural or diverse events are you celebrating? Develop a calendar of diverse events that your marina can celebrate.
- 10. Best practice.** Share with other marinas what works and what doesn't. Collaborate with other marinas to develop joint initiatives and resources that benefit a wide group of marina users.
- 11. Review and evaluate.** Equity, diversity and inclusion is not a one-off event. You should continuously seek feedback from marina users to identify any challenges or areas for improvement.
- 12. Keep going.** You are now on your way to developing a more inclusive and equitable marina. Don't stop. Improvement is an ongoing journey.



Melanie Symes

“Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.” *

Traditionally a rather “male” environment, the recreational boating sector still visibly employs more men than women in leadership roles. Images from gatherings of contributors to international marina-related conferences, uniting leaders of national boating associations or federations, depict a predominantly male presence.

This said, the tide is changing, if incrementally. The TransEurope Marinas association includes six member marinas in the Netherlands. There, in this golden land of equal opportunity, where each member is also a long-term holder of the Blue Flag, female managers outnumber their male counterparts. In Jachthaven Biesbosch, a 1400-berth marina which is part of the Yacht Havens Group, very unusually, the marina manager and the most established of three harbour masters, are both females.

Incorporating a gender perspective in the marina is not terribly complex, but the rate of change, despite being bound in law, lacks traction. Relevant data is of course required here, with the very paucity of detailed reports an interesting indicator in itself.

For now, it may be helpful to take a quick look at some of the basic strategies:

Representation of women in the sector

Have a look at images depicting people in the sector. Are women depicted as the skippers aboard boats or either featured next to a male skipper or passively lounging on the foredeck? Are they involved equally in technical repair work or rarely represented visually in this area? Are they shown taking the lines for arriving boats or rather at reception desks? What types of messages do these images convey to women who might be interested in seeking employment in the industry?

Reconciliation of work, family and private life

The “double” or “triple” working day refers to having to take care of unpaid domestic chores and family care, on top of having a job; an issue that came to the fore during the pandemic, with schools closed and remote working. This leads to even more time constraints and so good practice can ensure that meetings, staff communications, or decision-making processes are considered accordingly to ensure inclusivity.

Better work-life balance

The pandemic also provided some important lessons about developing resilience. One of the benefits of remote working beyond reducing disruption, is that if implemented well, it can permit staff members to better attend to their work-life balance, improving conditions for parents needing to care for dependents, thus addressing gender equality and the reconciliation of family life, work, and private life.

Vertical and horizontal segregation

Direct and indirect gender discrimination can manifest in various different ways: Vertical segregation refers to limiting promotion and career opportunities based on gender, where men and women might not be considered equally despite being similarly prepared. Horizontal segregation instead looks at types of positions are generally filled according to gender. Are there underlying beliefs that affect this matter, and might it be time to question them?

In summary: are we happy that men and women have the same levels of rights, responsibilities, and opportunities in marinas? If not, let’s consider how to move forwards by collecting data, working to counter bias and stereotyping, and ensuring an equal voice and representation for women in the boating sphere.

Recommendation/Ideas:

- Consider carrying out a gender audit
- Explore non-gendered words for “harbour master”, “yachtsman”?
- Identify strong female role models in the industry
- Check whether women are equally represented at decision-making level
- Find out more about Positive & Protective Actions

More information:

*UN SDG Goal 5: <https://www.un.org/sustainabledevelopment/gender-equality/>
European Institute for Gender Equality <https://eige.europa.eu/>

10 Building alliances

 SDG - 16, 17



Philip Easthill

Strength in numbers – building effective alliances to advance sustainability.

The importance of sustainability cannot be overstated, but neither can its challenges. The boating industry has a significant role to play in promoting and implementing sustainable practices. This article draws on the experience of European Boating Industry (EBI), as the association representing the industry at European level. We explore the concept of building effective alliances in the boating industry and the power they hold in advancing sustainability.

Overall, there is a welcome new approach developing, which moves away from silos and towards collaboration. While the boating industry considers itself (and this author agrees) as a sizeable sector of relevance to the EU, many regions, and communities, it requires allies. The boating industry itself is diverse, including boat manufacturers, marinas, suppliers, and boaters. Each sector contributes to the overall impact on the environment, making it essential to unite these stakeholders under a common goal of sustainability. By forming and supporting industry associations, the industry can pool resources, expertise, and influence to drive positive change. Alliances with other stakeholders develop best from this starting point.

At EBI, we currently have alliances, informal or formal, going on in areas as diverse as tackling trade tariffs and the recycling of end-of-life composites. The latter offers a clear example. Recreational boating has an issue in dismantling of end-of-life composites. However, we use only 2-3% of composite in Europe that gives limited opportunities for a separate recycling pathway. However, if we pool composite waste this becomes much more viable at commercial scale. We published a Roadmap on End-of-life boats, together with the EU Commission, that has been the result of exactly this type of collaboration.

From this and other experiences, it can be shown that the building of effective alliances comes down to four major areas, which ring as true for EBI's work at European level as it does at local or regional level.

Sharing Knowledge and Best Practices

Effective alliances provide a platform for the exchange of knowledge and best practices among industry players. It allows identifying sustainable solutions and implementing them more efficiently. For instance, manufacturers can learn from each other's successes and challenges in adopting eco-friendly materials and manufacturing processes if we look beyond our own companies and sector. Marinas can share innovative solutions for waste management and energy efficiency.

Amplifying Influence

Forming alliances, means gaining a collective voice, amplifying influence on policy-makers, regulatory bodies, and the public. EBI works in collaboration with other organisations from the tourism sector, to advocate for policies that promote sustainability in the tourism sector. By presenting a united front, alliances can raise awareness, and encourage policy-makers to implement sustainable practices across the industry.

Driving Innovation and Research

Alliances provide a valuable basis for fostering innovation and driving research in sustainable technologies and practices. Stakeholders can pool resources and invest in projects focused on reducing environmental impact. This collaboration enables the industry to develop new technologies, such as alternative propulsion systems, cleaner fuels, and recycling solutions. By embracing innovation collectively, alliances can push the boundaries of sustainability in the boating industry.

Establishing Standards and Certifications

Effective alliances can play a pivotal role in establishing industry-wide standards and certifications for sustainability. By setting clear guidelines and benchmarks, stakeholders can ensure consistency and accountability. These standards can cover areas such as carbon footprint reduction, Life Cycle Assessment and certification of marinas, helping promote trust and transparency within the industry and allowing consumers to make informed choices. The same is the case for qualifications that can help raise the level of professionalism when it comes to sustainability.

Through shared knowledge, amplified influence, and collective action, we can navigate towards a more sustainable and responsible future for boating.

Local Networks & Communities

SDG - 10, 11, 17



Melanie Symes

Collaboration, collaboration, collaboration.

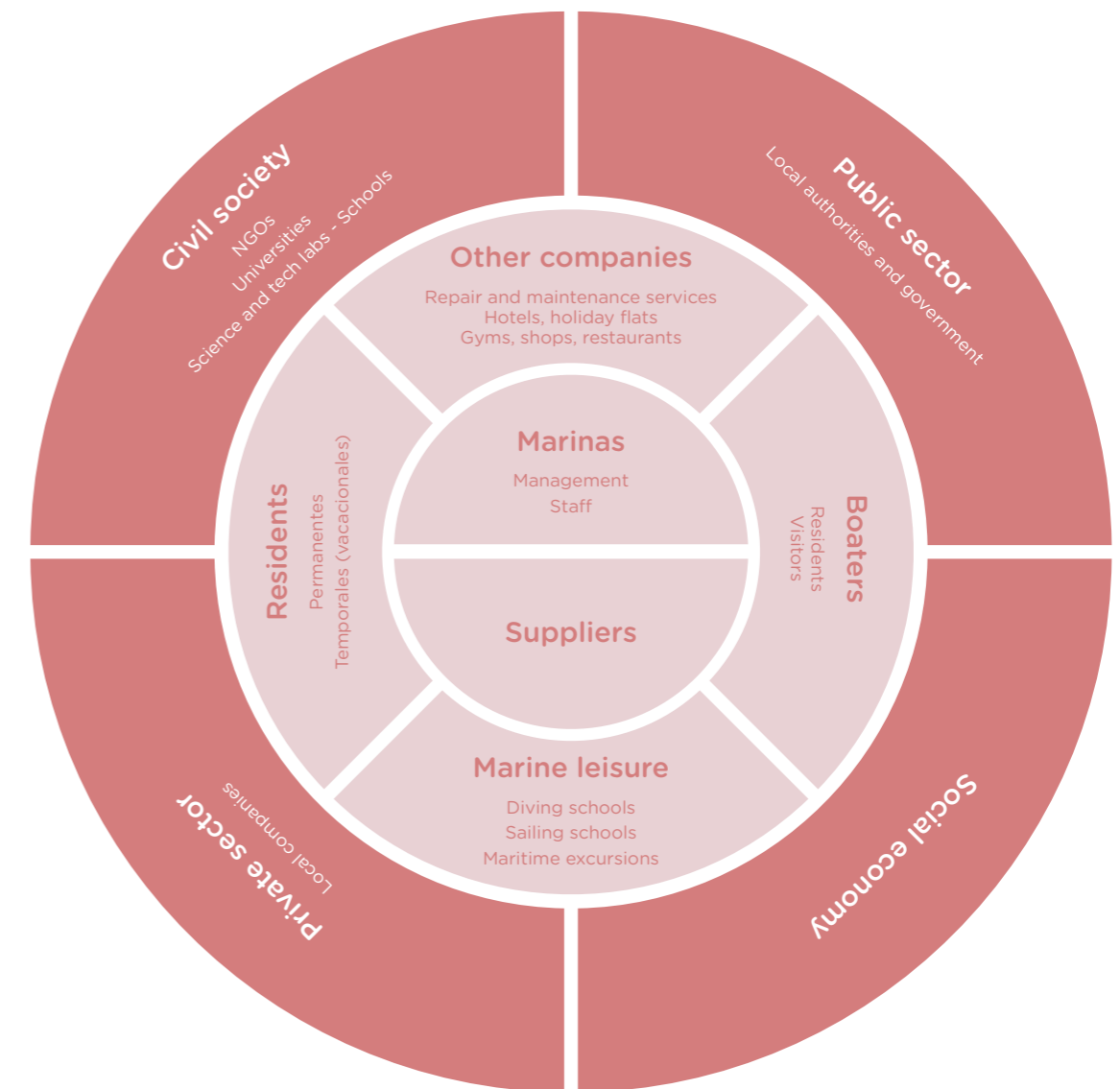
The nautical tourism sector might be said to have an advantage when it comes to collaboration, where it almost seems like second nature - perhaps due to a respect for the inherent obligation to assist others in need at sea, or simply because the rigours and nature of boating inspire openness and cooperation. Either way, it is an evident feature of marina and nautical communities, with participants freely sharing advice and experiences, and on pontoons, where a willing hand is rarely far from the berth.

Many marinas found that increased communication with customers and resident companies throughout the pandemic reaped significant rewards. With boaters unable to visit the marina, employees at home and a general sense of unease, people were reassured to receive informative and encouraging messages. Those that had already taken the time and trouble to establish channels, digitise communications and set up effective, consistent programmes, inevitably fared far better.

From an economic perspective, working together with shared goals and good leadership can help promote a nautical destination and its collected activities, generating positive economic impact and greater visibility. Further benefits might include better affordability for training programmes or shared tools or services through pooling resources, or perhaps reducing seasonality by developing new off-season revenue streams.

Exchanging ideas with other members of a wider society (civil society – schools, NGOs, scientific institutions; public authorities and private companies) and creating a fertile

Benefits of creating communities and networks



ground for innovation, can be a game-changer in terms of environmental sustainability. Opening doors, building trust and contributing available resources to necessary projects can be the basis for productive and strong relationships, and improved systems and infrastructure, ensuring better resilience in the event of shocks.

In terms of specific environmental actions, management plans and conservation efforts regarding local cultural heritage or natural capital can be assisted by bonding with associative networks, through shared communication, volunteer work, and the contribution of ideas and knowhow. In these ways, climate change mitigation and adaptation methods can become more widely accepted and divulged and gain far better traction.

Accessibility

Article 2 (Point 2) of the [Global Code of Ethics for Tourism](#) tells us:

“Tourism activities should respect the equality of men and women; they should promote human rights and, more particularly, the individual rights of the most vulnerable groups, notably children, the elderly, the handicapped, ethnic minorities and indigenous peoples”

To follow this code, we need to reach out to these sectors of society, recognise their needs and challenges and see how best we can accommodate their needs. Accessibility is vital in marinas, given the diverse needs of boaters and visitors. Whilst there are already regulations, norms, codes and guidelines to assist with this, is it always well worth contacting associations who support more vulnerable groups, inviting members to the marina and revisiting facilities and common spaces through their eyes or perspectives. This can be a very enriching experience - in unexpected ways.

Further ideas:

- Chat with boaters and find out what is important to them and why they visit
- Work with local stakeholders to provide relevant training and education and empower community members.
- Facilitate guided visits to the marina for young people
- Work with local chambers of commerce to create apprenticeships
- Incorporate cultural awareness and gender equality in training programmes
- Collaborate with tourist boards to improve destination management
- Invite guest speakers to engage boaters and resident on sustainable issues
- Celebrate successes and acknowledge individual efforts

Resources:

Examples of International Boating/Marina Networks:


[European Boating Industry \(EBI\)](#)

[International Council of Marine Industry Associations \(ICOMIA\)](#)

[TransEurope Marinas](#)

12

Digitalisation

 SDG - 11, 12, 13, 14, 17



Idan Cohen

Digitalisation as a roadmap to sustainability

Through a focus on digital technologies, marinas can minimise resource allocation, while making their contributions more visible and valuable to the community. Interconnected, accessible assets pave the way for digitally managed, smart, data-driven operations. Adopting smart technologies for communication with boaters and interconnecting marinas is one of the first steps towards addressing the sustainability challenges lying ahead of the recreational boating industry.

Digitising processes has the potential to streamline and optimise the day-to-day operations of marinas, facilitating communication with customers, service providers and other stakeholders in the industry. Digitalisation also has the ability to go one step further, harmonising systems and processes, thus saving coordination and verification time while building the baseline for generation of market data. Bringing a long overdue interconnection to the chronically fragmented industry, this is an opportunity to achieve both efficient and effective use of resources, smarter decision making and carbon and water footprint reduction.

Culminating in the use of Big Data, marinas can obtain a 360° overview of customer behaviour and preferences, together with industry trends, providing the opportunity to predict trends and patterns, make more efficient use of existing assets, making more informed decisions as regards operations planning and create new value propositions.

Building an Interconnected Ecosystem

Digital technologies help interconnect multiple components within a system, such as clients, service providers and assets, enabling them to exchange information, and “talk” to each other. This quick and seamless exchange of information creates accessibility, efficiency, and interconnectivity which facilitate optimization of operations, thus reducing environmental footprint.

Data generated through exchange of information, sensors and IoT, can facilitate improved efficiency through partial automation. Wirelessly connected assets, utilities, and appliances, along with sensors positioned in critical locations collecting necessary data such as traffic, weather, pollution, biodiversity, etc. can build comprehensive visibility of the operational environment and marinas’ natural surroundings.

This data can be used to make smarter decisions about issues such as water conservation and energy efficiency, apply circular economy models, and raise awareness about human-related stressors. Marinas from their part acquire the ability to use this data to react quickly and easily to events while lifting the associated operational burden of the staff’s shoulders.

The second data source for improved efficiency is marinas’ operational traffic. When all marinas’ communications with customers are performed via smart digital systems according to harmonized protocols, the accumulated data can be used for trend insights and machine learning. This permits existing assets to accommodate more users, reducing the further constructions, thus reducing the environmental footprint of the recreational boating industry.

In summary, the marina community needs to work together to help design and create affordable, effective, and value-generating digital services, that meet customer expectations and requirements, whilst respecting privacy and confidentiality, furthering digital competency and, most importantly, advancing sustainability across the spectrum.

-💡- Further benefits:

- **Service hub:** working digitally with surrounding nautical operators provides better services for boaters, creating visibility for the sector and strengthening communities.
- **Capacity building:** as marinas collaborate and learn together, accruing individual and collective knowhow, the sector benefits exponentially, leading to swift advances in sustainable good practice.
- **Harmonisation:** the sector could well benefit from unified protocols for boating procedures, along with their respective standardised practices, thus facilitating both the customer experience and the sector’s capacity to produce its digital twin.
- **Trust:** Data protection and privacy are critical aspects of concern, also requiring well-defined best-practice protocols.



🔗Resources:

[European Commission: Europe's Digital Decade](#)
[United Nations – Digital Cooperation Roadmap](#)

Idan Cohen

Smart cities, driving the development of Smart marinas

The term “Smart City” is rather topical designation today, associated with major cities around the world, although it’s not always clear what it refers to. What we do sense is that this term implies the use of technology, efficiency, and security with the aim of improving infrastructure and services for citizens.

Something similar happens with the term Smart Marina, which suggests a marina or yacht harbour committed to adapting to technological changes.

Technology is omnipresent in these times, the real challenge is to identify which technologies bring improvements for the stakeholders (i.e., customers and users of the marinas), and, almost as importantly, for the space in which these activities take place.

Marinas are often integrated within cities and, therefore, must be part of the data and information management systems of the so-called Smart cities. The nautical sector can then become a provider delivering sources of information, whilst at the same time receiving data from the city’s information networks to better plan demand and improve services and customer care.

Increasingly, we see sensors installed on board to detect and measure multiple variables, such as battery voltage, position, the presence of water in bilges, or to control the electrical charging system from the service pedestal. This means that marinas also have the channels and infrastructure to manage this flow of information.

Therefore, it seems that concerning cities and the drive for them to be increasingly interconnected, as well as the technology incorporated by boats, marinas must adapt their processes and infrastructure to this technological revolution.

Digitalisation and new technologies, in addition to helping improve customer satisfaction and achieve business benefits, can also help enhance the environmental performance of marinas. Greater management efficiency means that resources are used in an optimal manner; energy consumption is properly allocated; and predictions made to optimise aspects such as lighting, energy use for air conditioning, and in the near future, with more electric-propulsion boats, it will allow for more predictive demand for battery charging, thus reducing simultaneity and ensuring efficiency within these types of services.



Patrick Hemp

Considerations for marinas

Ultimately there is no one-size perfect solution to decarbonising recreational craft given their varied size, operational profiles, and geographical locations. There are however an increasing number of trade-offs becoming available in which key elements have been identified in other motorised sectors (both on-road and non-road mobile machinery as well as commercial shipping etc.), that can assist in reducing greenhouse gas emissions (GHG) from propulsion systems. Whilst some, such as sustainable or renewable fuels, are available today in small quantities, many new energy carriers or energy convertor technologies rely on projected advancements by 2035.

All this does not make it very easy for marina owners and operators to make strategic decisions and plan accordingly for the future demands of customers using alternative fuels - or the need to supply low carbon energy carriers in line with local or national GHG mitigation regulations or incentive schemes.

Given the relatively high energy density of our current fossil fuels (petrol or gasoline for spark ignition engines and diesel for combustion ignition engines), many sustainable alternatives will need additional storage space both onboard the craft as well as within the marina with possible significant improvements in the distribution networks.

The summary below provides an overview of some of the potential benefits and drawbacks of alternative fuel supply:

Sustainable or renewable fuels

Examples of these include HVO (hydrotreated vegetable oil) fuel and e-gasoline which is considered a carbon-neutral fuel and is currently under development by some car manufacturing companies such as Audi.

Fuel docks in marinas will be able to utilise the same storage and supply infrastructure used for current fossil fuels, but additional separate storage and equipment may be required for the period in which both fuels need to be available.

Full electric

Electricity can be supplied via the grid (with some network upgrades required), as well as generated from renewable sources (wind/solar) within the marina. Having a separate on-site energy storage system would reduce peak electricity loads and possibly reduce costs in the long term. Vehicle to grid (V2G) technology may undergo further improvements and enable larger marinas to benefit further from those craft with low utilisation. Simultaneous high-power charging may be difficult to achieve and levels of priority for certain users (short-term rental fleets) would need to be determined.

Hybrid electric and hydrogen (fuel-cell)

Whilst the use of hybrid electric systems results in higher energy efficiency, lower fuel consumption, exhaust emissions, and maintenance costs for the vessels themselves, these types of independent vessels would not typically place extra demands on the marina and could reduce the levels of local pollutants.

Hydrogen (internal combustion engine)

Hydrogen can either be transported safely by tankers or trucks, supplied directly by pipeline, or produced sustainably on-site as 'green' hydrogen. Significant investment may be required by marinas depending on the options available.

ICOMIA and its Marine Engine Committee (IMEC) Members have commissioned Ricardo Plc. to conduct independent scientific research together with life-cycle analysis (LCA) experts to identify suitable propulsion technologies for decarbonising recreational craft. This comprehensive study will undergo third-party verification before publication in the near future.

ICOMIA Marina Group (IMG) Members have been participating within the PIANC (The World Association for Waterborne Transport Infrastructure) Working Group 217 providing guidance on The Impacts of Alternative Fuel Propulsion Systems for Recreational Vessels on Marina Design and Management (not yet published).

Consideration should also be made for methanol and ammonia as an alternative fuel for the next generation of superyachts, although this will be very much dependent on which pathways are chosen in terms of the commercial shipping sector.

Clearly the alternative energy landscape is set to change at a rapid pace and future technology may require a review of the options mentioned in this section. In terms of the infrastructure needed, there will always be a 'chicken versus egg' situation, (meaning the difficulty of sequencing actions where each seems to depend on others being done first) and readers are encouraged to engage with their national Marine Industry Association for further information.

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- A list of all ICOMIA Members can be found here: <https://www.icomia.org/show-icomia-members/all>
 - Further information on the regulatory mapping (in relation to ISO and EN standards as well as IMO conventions) of alternative marine fuels can be found here: <https://greenvoyage2050.imo.org/alternative-marine-fuels-regulatory-mapping/>

15

Resilience

 SDG - 3



Marcelo Sabanes – SES Efficiency

Prevention as a means to achieving a better response and less impact

Resilience is defined as the capacity to respond to potential threats, risks and/or adverse events that may affect the safety of a person or infrastructure.

Marinas in coastal areas are exposed and may be more, or less vulnerable to certain hazards and risks depending on the prevention actions they have taken implemented in their design phase, and/or in terms of the adjustments they can make to pre-existing facilities to adapt to the new climate reality.

Risks are mainly divided into three typologies, which are:

Climatic - the first of which are the so-called extreme weather events (EWE), which include, among others, storms, coastal phenomena, (waves, tidal disturbances) hurricanes, cyclones, tidal waves, and tsunamis, but also others that develop over time such as rising sea levels, and all of which have a direct impact on the entire infrastructure, equipment, vessels, and people in the marina.

Geological - derived from the characteristics of the territory, the main ones being seismic movements leading to earthquakes or landslides, and the risk of volcanic eruption.

Anthropogenic - which includes all risks derived from human activity.

In turn, the 3 phases of risk are differentiated between:

1. Preventative actions
2. Response
3. Recovery

In this context, it is essential that every marina/marina carries out a correct and detailed identification of the main hazards and risks to which it is exposed, so that based on corresponding diagnosis it can work on the development and implementation of a Risk Reduction and Management Plan, with specific actions for the gradual development of greater resilience in all areas. People always come first, followed by equipment and infrastructure; always working from a preventive and not reactive approach. It helps to include specific indicators to measure the evolution of the project, and awareness campaigns for staff members and customers, including signage with information about the main risks and the preventive measures to be applied.



Prevention is up to 12 times cheaper than response. Every euro invested in preventive action can help us save up to 12€ in the event of a threat or risk materialising without having acted previously to mitigate its impact.

The effects and impact of climate change are contributing to more intense and frequent extreme weather events.

Like sustainability, resilience is a process of continuous improvement, rather than an end goal, as well as a duty and a collective responsibility.

Resources:

[Sendai Framework for Disaster Risk Reduction 2015-2030 | UNDRR](#)

16

Biofouling

 SDG - 13, 14



José Luis Fayos – Global Management Consultoría

The accumulation of living organisms on submerged surfaces

The introduction of invasive aquatic species within the marine environment as a result of port operations, vessel traffic and their movements, affects biological diversity and has cumulative effects on ecosystems, altering their natural evolution.

Biological pollution¹ is the second cause of biodiversity loss according to the United Nations Development Programme (UNDP). Some of the most representative examples are the zebra mussel (*Dreissena polymorpha*), which reproduces very rapidly, causing damage to habitats and even industrial, agricultural, and urban supplies by clogging filters and pipes. Another example is the *Caulerpa taxifolia* also known as “killer alga”, a species native to tropical seas that has arrived in the Mediterranean where it is threatening native species of algae and endangering the entire ecosystem. In its natural habitat, predators are immune to the *Caulerpa* toxin, but in the Mediterranean the toxin is very harmful.

In addition to the well-known antifouling paints based on organic biocides and copper derivatives, other solutions are beginning to be implemented, such as antifouling by means of adhesive film without biocides, in which the non-stick effect of silicone-based paints is used to prevent fouling. More recently, electrochemical signal-based systems are being experimented with, which produce an environment around the area to be protected that is uncomfortable for the development of fouling.

Furthermore, in relation to the effect of biological fouling on climate change, practices such as more effective hull maintenance (and therefore lower fouling rates through the use of antifouling elements), advanced coatings and correct polishing of propellers, contribute to reducing energy consumption on vessels, which means a reduction in greenhouse gas emissions.

The IMO (International Maritime Organisation) is developing an interesting project² to highlight the importance of applying effective measures to prevent fouling and the migration of invasive species in shipping and recreational boating practices.

Ideas/recommendations:

- Contact scientific bodies to collaborate with projects that study invasive species.
- Collect and treat water used for cleaning hulls in boatyard.
- Encourage the use of pump-out facilities to empty tanks.
- Apply good practices in the cleaning of boats in sailing centres.

¹Accumulation of aquatic organisms, such as micro-organisms, plants and animals on surfaces or structures submerged or exposed to the aquatic environment. This contamination can be microbiological or macrobiological.

Resources:

[Glofouling partnerships²](#)
[Invasive species protection – Green Blue RYA](#)

17 Dredging

 SDG - 9, 14



José Luis Fayos – Global Management Consultoría

Fundamental to sustaining port operations

Among the impacts of climate change on ports, more frequent episodes of coastal erosion, flooding within ports and in coastal areas and also greater runoff and sedimentation are anticipated, which will mean more dredging operations.

Any dredging operation requires complete environmental impact studies to analyse the origin and destination of the dredged materials, and the effects of this activity on the biotic environment, on the landscape, on economic activities, on infrastructures and on possible protected areas, among others.

One of the reasons for this is that this type of operation can alter the physical and chemical parameters of the environment, such as turbidity¹, and release pollutants from the sediment, incorporating them into the water column where the dredged material is dumped. It is however important to note that dredging is a very necessary activity within ports, allowing them to operate by adjusting channel depths for deep-draught vessel traffic.

The existence of impacts linked to dredging does not mean that preventive and corrective measures cannot be established to correct these impacts in order to make these operations compatible with the appropriate and necessary environmental regulations. Some of these measures may be related to the selection of favourable dates and environmental conditions for dumping waste (waves, tides, currents, wind conditions, etc.); the selection of the dredging system and procedures with the aim of avoiding the resuspension of sediments and, fundamentally, to carry out a complete monitoring of the processes, through an Environmental Monitoring Plan, so that in the event of anomalies being detected, corrective actions can be implemented as soon as possible.

Suggestions/Ideas

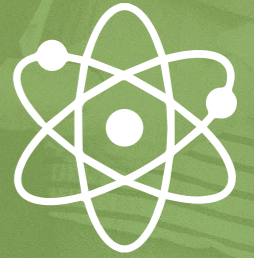
- Prioritise the reuse of dredged materials rather than dumping them
- Monitor before, during and after dredging operations for environmental impact.
- Plan dredging operations in advance in order to benefit from the most favourable conditions; not waiting until dredging is urgently required.
- In general, when considering management options for dredged material, the preferred option should be to retain the dredged material within the same aquatic sediment system from which it originated (beach regeneration or harbour fill), provided that it is technically, socially, economically and environmentally feasible to do so.
- Consult the standards and recommendations defined in each region for the characterisation of dredged material, including the provisional definition of pollution thresholds to assess the environmental acceptability of dumping at sea (action levels), the necessary studies for the selection of the dumping area and corresponding environmental monitoring programmes.

¹Turbidity is a phenomenon that decreases the transmission of light in the water column, which given sufficient intensity and duration is sufficient, can affect ecosystems present in the area. Turbidity produced as a result of dredging occurs due to suspended particles remaining in the water column, creating two measurable factors: the amount of material held in suspension, and the period of time that the material remains in the water column during the dredging process.

18

Citizen science

 SDG 14



Dr. Dominique Durand

Coastal Nautical tourism: a key actor of citizen marine science

Did you know that as a recreational boater or diver, you have the opportunity to contribute to scientific research on the ocean and coasts, while also supporting sustainable tourism in Europe?

Europe boasts a 70,000 km of coastline, teeming with diverse marine ecosystems and abundant biodiversity. But our coastal regions are under threat, facing mounting challenges such as climate change, pollution, and overexploitation. Protecting our coastal seas and harnessing their resources sustainably (essential for the energy transition and increasing protein sources), is a monumental task for our generation and the next. This urgent mission demands new knowledge and a densification of observation and data that cannot be generated by the scientific community alone. It requires more hands, creating the opportunity for citizens to actively contribute to safeguarding our shared heritage.

Citizen science is a growing movement that allows individuals to actively participate in collecting data for scientific research. By working with researchers, and performing observations of the ocean, you can help protect and sustainably exploit our ocean resources, while deepening your own understanding of the sea and its ecosystem. Whether you're measuring water quality, documenting marine species, or collecting data on ocean currents, your contribution will help scientists and policymakers better understand and manage our oceans.

Coastal nautical tourism and marinas provide an ideal platform for recreational sailors and scuba-divers to engage in citizen science initiatives, while also supporting local economies.

Examples of the many citizen science projects out there are:

- The Ocean Sampling Day project aims to collect water samples from around the world on the same day. Participants collect water samples and document the sampling process, providing valuable data on microbial biodiversity in the ocean.
- The Seasearch project trains citizen scientists to document and report on the marine life they encounter while diving. The data collected is used to inform conservation efforts and improve our understanding of marine ecosystems.
- The CleanSea project engages citizens in monitoring marine litter and documenting its impact on marine wildlife. The data collected is used to inform policy and management strategies for reducing marine litter.

The European Union has been at the forefront of promoting citizen science initiatives, leading to more and more research projects include citizen science, providing a stream of new opportunities for boaters and marina teams to engage in and contribute to science. Recreational sailors can be provided with scientific sensors and tools (Apps), allowing them to perform high-quality measurements of key marine parameters (for example sea temperature, water quality, oxygen content, pH, and many more).

Likewise, scuba-divers can take part in training to recognise the marine fauna and flora and be equipped with technology for registering their observations on scientific data platforms.

As a stakeholder in nautical tourism, you are uniquely positioned to contribute to ocean and coastal science in Europe. By participating in citizen science projects, you can make a real difference for the health of our oceans and the planet. So why not get involved today and start making a difference?

References for further reading:

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19

Blue Marine Foundation



BLUE MARINE
FOUNDATION

Working with ocean conservation NGOs.

Blue Marine Foundation is a UK ocean conservation charity set up in 2010 by some of the team behind the award-winning documentary film 'The End of the Line'. Blue Marine aims to restore the ocean to health by addressing overfishing, one of the world's biggest environmental problems. The charity is dedicated to creating marine reserves, restoring vital habitats, and establishing models of sustainable fishing. Its mission is to see 30 per cent of the world's ocean under effective protection by 2030.

With an impressive track-record over the last two decades working with national and island governments to protect vulnerable and biodiversity-rich areas, Blue Marine works to tackle the climate and biodiversity crises, by taking action to prevent illegal or destructive fishing practices, as well as protecting and restoring life in the ocean.

The team at Blue Marine heads up worldwide research and conservation projects with partners across the globe, from Patagonia to the Maldives. They support sustainable management of fisheries, support the development of small-scale sustainable fisheries, and have produced an award-winning ocean education experience – [The Sea We Breathe](#).

Their work in the Mediterranean alone saw them connecting some thirty international conservationists last year to protect key species of turtles, rays, seals and dolphins, and marine habitats including coral reefs to seagrass meadows, as well as to remove tonnes of discarded fishing gear from Marine Protected Areas (MPAs) and install anti-trawling devices.

Blue Marine Foundation are partners of a highly ambitious \$15-million, five-year global research programme known as the Convex Seascape Survey, which seeks to understand and measure the global shelf seas' capacity to store carbon and related anthropogenic impacts on these stores. This depth of knowledge is essential for formulating effective climate policies, designing and implementing mitigation strategies, and safeguarding the health of our planet.

In order to develop their ocean sustainability agenda and help protect their local areas, marinas could consider the following:

Support sustainable financing

For MPAs to provide protection for marine life and enhanced income for low-impact fishers, they need long-term financing. This is where marinas located within MPAs can play a pivotal role. Financial partnerships can provide an opportunity to not only amplify the reach and impact of marine conservation projects helping to protect vulnerable coastlines, but also provide a chance for boaters to directly connect with the surrounding marine environment. This can be delivered through two mechanisms: establishing sustainable finance and an education and outreach programme. The development of a sustainable finance model, where residents and visitors pay a conservation fee towards an effective management programme, can ensure the longevity of marine protection and sustainable fishing in their local area. An accompanying education and outreach programme helps increase public awareness about local MPAs and supports effective marine conservation. In tandem these two mechanisms can ensure that marinas and boaters are contributing positively to their local marine area in perpetuity through sustained finance and behaviour change.

Help develop restoration projects

In the UK, the Solent Seascape Project, led by Blue Marine Foundation and funded by the Endangered Landscapes Programme, works collectively with stakeholders and community groups across the Solent area. It is restoring oyster reefs, seagrass meadows, saltmarsh, and seabird nesting sites in the Solent.

Create a code of conduct for boaters


Based on local expert advice encompassing key marine species, protected areas or vulnerable ecosystems, marinas can co-design codes of conduct for boaters. These could include advice on how to minimise disturbance to marine life, reduce the chance of water pollution, promote awareness and responsible behaviour, and protect habitats from damaging activities.

For more information on the Blue Marine Foundation, please visit:

<https://www.blumarinefoundation.com/>

20

Ocean
literacy

 SDG - 3, 13, 14, 17



Melanie Symes - Innovamarina

What is Ocean Literacy and why does it matter to marinas?

“The health of seas and oceans is the key to the resilience and profitability of our blue sectors. Ensuring healthy and sustainable oceans and seas is not only crucial to keeping the economy of our coastal communities alive, but also the most important asset of the Blue Economy”. (The EU blue economy report 2022¹)

The United Nations Decade of Ocean Science for Sustainable Development has provided the opportunity to build an impressive international community and focus important resources on furthering ocean conservation. Based on the principle that the impulse behind positive action is an informed understanding, significant efforts are going into communicating the myriad of vital roles played by the ocean:

“If the global blue economy, were compared to a national economy, it would be the seventh largest in the world, and the ocean as an economic entity would be a member of the G7. It operates in the planet’s vastest ecosystem: oceans hold 97% of all our water and 80% of all life forms. The ocean surrounds and sustains us, providing enough oxygen for every second breath we take, food for almost half of humanity, and critical resources for human health, not to mention a web of economic interactions.”²

Beyond our individual and collective responsibility, marinas also have a vested interest in maintaining clean and healthy waters and an attractive, litter-free coastal arena and

can comprise a key space for building momentum in ocean literacy. Blue-water cruisers, who have traversed the oceans during decades, share first-hand reports of rising level of marine litter, plagues of algae, stranded cetaceans, disappearing glaciers and degraded dive site habitats.

Monitoring oceanic and atmospheric conditions can enable marinas and their wider communities to detect problem and trends, thus raising awareness and working collectively towards develop actions in favour of climate mitigation and adaption. In this regard, some nature-based solutions have recently been receiving deservedly good coverage:

The **Billion Oyster Project**, based in New York Harbour, is a project that aims to regenerate oyster beds and reefs to help improve coastal resilience from storm surge and flooding after significant dredging for ship access changed the structure of the seabed, while also rebuilding valuable ecosystems. As an additional bonus, these tasty bivalves are also well-known for their filtering capacity, removing harmful nitrogen and pollutants from the water.

Restoring ecosystems, particularly those multipurpose “blue carbon” habitats, can help make them more resilient to shocks. The **Blue Marine Foundation**, also known as “Blue” is an award-winning charity, engaged in ocean literacy, ocean science and restoring ocean health. Their projects range from reseeding seagrass meadows, to addressing overfishing, and their ambitious goal aims to protect 30% of the world’s oceans by 2030. Their website is attractive and inspiring and well worth a visit.

With their indicative slogan “We bring concrete to life”, **ECONcrete** do exactly that. Their proprietary technology affects the chemical composition and design of concrete marine infrastructure to support biological processes - which contribute to both, a balanced healthy ecosystem and structural durability. Marine infrastructure built with ECONcrete’s technology is quickly encrusted in rich marine life, like oysters and corals. This living layer not only makes concrete more durable, but also transforms ECONcrete’s industry-standard concrete into a self-mitigating, carbon storing structure.

¹ European Commission, Directorate-General for Maritime Affairs and Fisheries, Addamo, A., Calvo Santos, A., Guillén, J., et al., The EU blue economy report 2022, 2022, <https://data.europa.eu/doi/10.2771/793264>


² European Parliament, Council of the European Union, 2021, “COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on a new approach for a sustainable blue economy in the EU Transforming the EU’s Blue Economy for a Sustainable Future”

Resources:

[OECD – The Ocean Intergovernmental Oceanographic Commission of UNESCO \(IOC\) The Ocean Decade](#)

21

Regenerative tourism

 SDG - 11, 12, 13, 14, 15, 17



Melanie Symes - Innovamarina

Finding inspiration in nature

Regenerative tourism is centred around improved socio-ecological governance, paying tribute to our inherent connection with nature and rooting actions within place, local peoples, cultural heritage, and environmental idiosyncrasies. This is a singularly contextualised approach, requiring collaborative input from multiple parties and a robust monitoring and evaluation process.

Going beyond the principle of not causing harm, the idea is that here, nautical tourism and marina operations can actually deliver environmental benefits, improving the level of resilience as regards all manner of climate-related risks and seeking out nature-based solutions to help redress damage done to surrounding habitats.

Naturally, as in many of the topics covered previously, one first step might be to obtain an informed overview of the situation in the marina via existing reports, the use of sensors, ROVs or biomonitoring exercises. Sensors could measure levels of contamination in marina waters, for example, or temperature, turbidity, or noise levels. Validated scientific analysis then checks for types of impact suffered by marine life in and around the marina. With this intelligence in hand, the marina can then proceed to discussing viable means to addressing the identified problems, working towards restoring damaged habitats and biodiversity together with the assistance of the wider community.

From a cultural perspective, regenerative tourism calls on a greater understanding of local traditions and respectfully inviting visitors to take part or enjoy curated experiences. Typical artisanal crafts using sustainable materials can also become the basis for workshops, with profits returning at least in part to the community. Coastal tours could explore the highlights of local maritime heritage from a new perspective and diving excursions could

look to contributing to harmonised biomonitoring projects, collecting important data on marine ecosystems, while citizen science projects recording observations of marine birds or cetaceans could be a feature of boat-based excursions.

Land-based walking or cycling tours could explore and contribute to land management methods that respect natural dynamics and circularity processes for resources, such as ecological methods for collecting rainwater or phytodepuration methods for filtering and reusing wastewater. Hospitality services can offer dishes using organic km0 produce and choose to highlight typical preparation methods of interest to visitors.

Ideas:

- Nature-based solution projects, regenerating marine ecosystems, could also be prime sites for tourism, where diving or snorkelling visitors receive explanations on the methodologies used, and are able to contribute to the projects.
- Marine areas with sensitive seabeds can benefit from ecological anchoring systems, to avoid scouring the seabed.
- Understanding more about how acoustic contamination can affect marine life may drive change in terms of the choice of leisure activities offered from marinas, accelerating the transition towards electrical propulsion
- Consider assessing the carrying capacity in more congested areas, prioritising restorative actions and perhaps encouraging displacing activity to other areas.

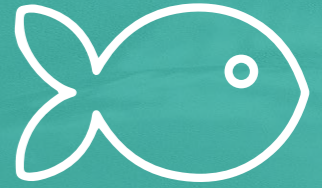
Resources:

[Regenerative Travel – How Marine Conservation and Tourism can Save our Planet Resilience.org](#)

22

Biodiversity & Stewardship

 SDG 14



Dr. Dominique Durand

Environmental Stewardship and Marine Biodiversity: A Call to Marina Managers

Ocean and coasts are facing a global loss of biodiversity and significant deterioration of their underwater landscapes. It is vital to protect and conserve the health of this local natural capital, a key value provider for nautical tourism.

Marinas serve as gateways to the enchanting world of our oceans, providing recreational opportunities for boaters and enthusiasts alike. However, it is crucial for marina managers to both recognise and address the potential negative impacts that boating activities can have on marine biodiversity, whilst also raising awareness about the importance of environmental stewardship and the value of collaboration with local stakeholders and scientific experts.

Boating activities can unintentionally harm marine ecosystems. Occasional negative impacts include habitat degradation, water pollution, and disturbance of wildlife. A comprehensive understanding of these impacts is important to effectively mitigate and restore any damage caused. By recognising the nature, source, and relevance of these impacts, one can take proactive measures to minimise their footprint on the environment.

The significance of collaboration with local stakeholders and scientific experts cannot be overstated. Engaging with these key players allows marinas to access valuable knowledge, expertise, and resources for sustainable practices. Local stakeholders, such as research institutions and conservation groups, can provide insights into the unique ecological characteristics of the area and offer guidance on conservation initiatives. Scientific experts,

including marine biologists and ecologists, possess specialised knowledge that can assist in quantifying the impacts of boating activities and formulating effective mitigation strategies. These experts have the means to conduct environmental assessments, monitor biodiversity, and recommend best practices for sustainable marina management. By working together, marina managers can tap into a wealth of expertise and ensure that their actions are informed by the latest scientific research.

Success stories

- Demonstrating the positive outcomes of collaboration between marinas, stakeholders, and scientific experts, the Marine Conservation Society in the UK, for instance, collaborated with marina managers to establish the “Good Beach Guide” scheme, which recognises marinas committed to sustainable practices and protecting marine life. The cooperation between marina managers and scientific experts has led to the development of environmentally friendly infrastructures, such as eco-friendly moorings and innovative sewage treatment systems.
- A collaborative sustainability project involving the pontoons of coastal marinas, marine industry organisations and conservation bodies is seeking to restore wild oyster populations in England, Scotland and Wales.
- In another example, the Coastal Conservation Association in the United States partnered with marinas to create artificial reefs, providing habitats for fish and other marine organisms.

These initiatives not only enhance biodiversity but also attract divers and snorkellers, boosting local tourism and the economy. They also provide the opportunity for marinas to support local authorities and lifesaving teams in providing advice to bathers.

Similarly, marinas can play an important role in detecting environmental events and problems (See article on Citizen science). If injured fauna is spotted in or near the marina, it would be ideal to be aware of and inform local wildlife rescue organisations or scientific experts, who can provide immediate assistance and minimise further harm. Further examples are harmful algal blooms (HABS) or jellyfish proliferation, which can cause significant harm to marine life and pose risks to human health. Existing initiatives include:

- JellyWatch Europe: JellyWatch is an online platform that encourages citizens across Europe to report jellyfish sightings and provide information on their abundance and distribution. The data collected by volunteers help scientists track jellyfish populations, understand their behavior, and identify any potential patterns or changes over time.

- Phytoplankton Monitoring Network (PhytoMn): PhytoMn is a citizen science project in Europe focused on monitoring phytoplankton, including harmful algal blooms. Volunteers collect water samples from coastal areas and analyze them for the presence of harmful algal species. By reporting their findings, citizens contribute valuable data that aids scientists in assessing the extent and impact of HABS, ultimately contributing to environmental management efforts.

In collaboration with environmental experts and scientists, marinas could also establish dedicated and fit-for-purpose protocols to identify, monitor and report HAB and/or Jellyfish occurrences promptly. These initiatives would greatly benefit from the active participation of Marinas in monitoring and understanding the dynamics of HABS and jellyfish populations, fostering greater public engagement and environmental awareness.

Environmental stewardship is important for marina managers and boaters to safeguard marine biodiversity. By recognising the nature and source of negative boating-related impacts, collaborating with local stakeholders and scientific experts, and implementing restorative actions, marinas can become champions of sustainable practices, ensuring a vibrant and thriving marine ecosystem for generations to come.

References for further reading:

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<https://cocomarina.com/news/cca-louisiana-gets-artificial-reef-at-the-pickets-underway-out-of-coco-marina>

<https://www.metstrade.com/news/sustainability/marinas-rescue-wild-oysters>

 **SUSTAINABLE DEVELOPMENT GOALS**

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS



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Elizabeth Dumergue - Elizabeth started her career as a lawyer over twenty years ago before becoming a sustainability and diversity, equity and inclusion professional. She is the Head of Sustainability at the International Council of Marine Industry Associations (ICOMIA). In addition to her work at ICOMIA, she is also the Chair of a non-profit organisation aiming to help companies transition to a net zero economy, as well as being the Director of Diversity, Inclusion and Engagement at Pride In London. Pride In London runs various events, including the annual Pride event in central London which attracts approximately 1.5 million people. You can reach out to Elizabeth on LinkedIn at <https://www.linkedin.com/in/eliz-dumergue/>

José Luís Fayos - Global Management Consultoría SLU - José Luís Fayos is Technical Advisor with ANEN (Asociación Nacional de Empresas Náuticas), president of the ICOMIA Sustainability Committee and active in various other committees. He is an engineer and has spoken in a wide variety of forums and seminars on nautical issues, specifically marina design and management. With more than 15 years' experience in the nautical sector, José Luís works on design, planning and management projects for nautical facilities and marinas at an international level, as well as carrying out audits of marinas and running courses on emergency response and environmental management.

Esteban L. Biondi - Esteban is an engineering and environmental consultant with more than 25 years of experience in comprehensive marina design and sustainable waterfront development projects, having participated in more than 200 marina consulting assignments worldwide. He is a member of ULI and serves in the ULI SE Florida and Caribbean District Resiliency Committee. He is the Chairman of the Recreational Navigation Commission of PIANC, representative of PIANC in ICOMIA Marinas Group, member of the PIANC Working with Nature Jury, and the principal author of the working group report 'Guidelines for Sustainable Recreational Navigation Infrastructure'.

Marcelo Sabanes - SES Eficiencia - A member of the Regional Coordinating Committee Advisory Group MCR2030 EU - United Nations Office for Disaster Risk Reduction, Marcelo specialises in project management, sustainable development, disaster risk reduction, risk management, climate change mitigation and adaptation with emphasis in urban planning, low carbon cities, circular economy, community engagement and development, renewable energy, capacity development, training and strategic partnerships and planning.

Idan Cohen – Pick a Pier - Idan is owner and founder of Pick a Pier, an innovative Israeli marine tech start-up, at the centre of promoting the concept of "Smart Marinas" together with ICOMIA and EBI. Aims include facilitating international boater movement (existing barriers include a lack of access to information on regulations covering length of stay, access requirements, etc.), improving communication processes between boaters and boater service providers (such as marinas), and fully optimising marina operations in line with customer requirements and advances in other sectors, such as hospitality.

Philip Easthill - Philip Easthill is Secretary General at European Boating Industry (EBI), an umbrella organisation representing the recreational boating and nautical tourism industry in Europe, including boatbuilders, refit and maintenance companies, marinas, brokers, importers and yacht charter companies. As an established stakeholder at EU level, EBI's mission is to advance and represent a sustainable boating and nautical tourism industry #MadeInEurope. EBI has partnered with the UN Decade of Ocean Science for Sustainable Development, committing to the UN Sustainable Development Goals.

Patrick Hemp - Patrick Hemp is the Technical Consultant for the International Council of Marine Industry Associations (ICOMIA) and IMEC since 2013. Previous positions include being the design coordinator for the multihull company, GUNBOAT and is a yacht design graduate from The Landing School in Maine, USA having spent many years as professional crew upon privately owned classic sailing yachts. He currently lives in Cape Town South Africa where he tries to keep up with his sons in all watersport-related activities.

Dr. Dominique Durand - Dominique Durand is an entrepreneur, researcher, science manager, and science strategy advisor, based in Bergen, Norway, working on the sustainable protection and exploitation of the sea. He is a scuba-diving instructor and precursor (since 1986) in engaging scuba-divers in scientific activities. He has led "Ship-of-Opportunity" initiatives since 2001, using commercial and recreational boats for automated observation and scientific measurements at sea.



Innova marina

