A brief introduction to

Sustainability in Marinas

Innovamarina

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Responsibilities have shifted with the growing tide of scientific publications describing the dire consequences of not acting now to reduce anthropogenic GHG emissions and biodiversity loss. From the IPCC and IUCN's reports, the message is that we are nothing if not pressed for time, but that a close examination and reevaluation of our current modus operandi is imperative.

How does this affect life in marinas?

As major players in coastal tourism, marinas offer attractive and regulated access to the sea, via facilities for boaters, curated waterfronts and often an array of marine leisure operators. Increasingly, within this privileged role linking the land to the ocean, marinas are choosing to practice ocean stewardship: lifting the lid on activity-based environmental stressors, promoting ocean literacy and inviting civil society members to carry out environmental and conservation studies.

At the same time, collaborative actions can help contribute to developing resilience for both the marina hub and wider locality. Strengthening communities both locally and internationally, promoting local cultural and natural heritage, creating a more diverse workforce, and reaching out to include more vulnerable sectors of the public, are all beneficial actions that can contribute towards a more equitable - in many cases productive, and interconnected society.

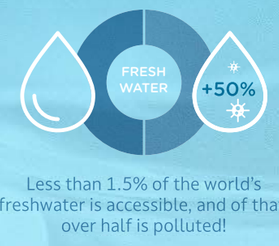
Faced with impacted marine ecosystems, an increasing occurrence of extreme weather events, rising temperatures and worsening global socioeconomic and political issues, we need to do what offshore sailors do – prepare, intelligently, for the worst. A first step might be to start checking through our systems, making careful use of limited resources; paying a healthy respect to our surroundings and the signs around us; watching out for our crew and other boats, and amending our course accordingly.

This brief, practical guide explores some of the many components of sustainability pertinent to marinas. It includes content from various specialists in the field, exploring topics from water and energy to digitalisation. Just a small taster of course, but hopefully one that stimulates an appetite!

01

Water

SDG - 6, 12, 14



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.

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.

02

Energy

SDG - 7, 12, 13, 14

José Luís Fayos – Global Management Consultoría

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 neutrality[1].

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** in which the Port of Valencia is involved, taking advantage, as its name suggests of wave energy, and capable of covering the lighting needs of Valencia Marina, amongst other services; a marina with more than 800 berths for recreational vessels.

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,)

03

Circular economy

SDG - 6, 7, 8, 13, 14

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.

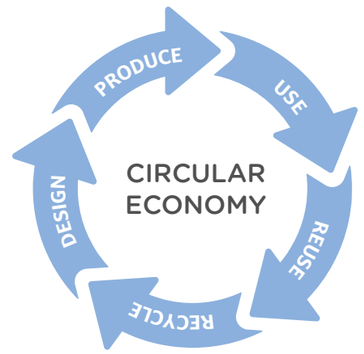
The nautical sector has always faced a great challenge to recycle the materials that are part of the boats at the end of their useful life. This is firstly due to the way in which they are so thoroughly glued together, but perhaps more important, since the vast majority of these are plastics or thermosetting polymers[1], 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.



[1]Thermoset 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?”
METS Trade: “Disposal of End-of-life boats”

04

Sustainable waste management

SDG - 6, 12, 13, 14

Marcelo Sabanes – SES Efficiency

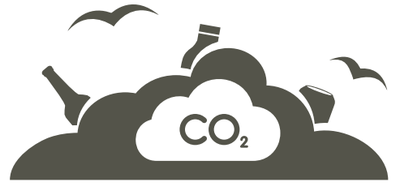
As a specific contribution to sustainability and carbon neutrality

Our very existence and our consumption habits generate significant amounts of waste on a daily basis. Different and technologies 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.

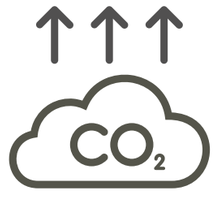
Marinas, like all economic service activities, generate significant volumes of waste as part of their daily operations, many of which are classified as hazardous waste (fuel, antifouling, grease, oil, paint, etc.), and it is the responsibility of these facilities to manage them properly in order to reduce 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 will be to have a network of associated services that allow the highest degree of use, transformation or recyclability of the materials.

This action goes far beyond the typical containers for separating glass, paper and cardboard, plastics and aluminium, but should also include hazardous and/or kitchen waste such as compostable organic waste, and the removal and correct treatment of the so-called effluents.



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.

05

Digitalización

SDG - 11, 12, 13, 14, 17

Idan Cohen – Pick a Pier

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 360º 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 decisionsas 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.

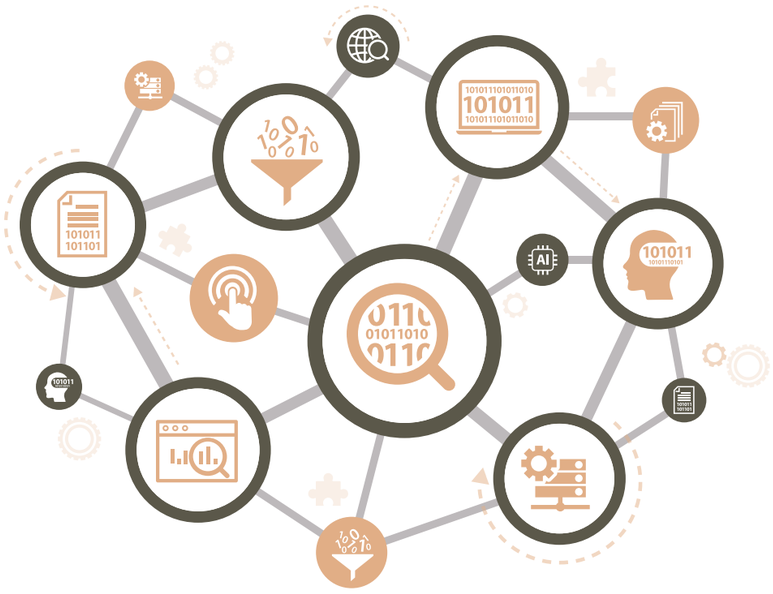
Data generated through exchange of information, sensors and IoT, can facilitate improved efficiency through partial automation. Wirelessly connected assets, utilities, and appliances, along with sensors positioned in critical locations collecting necessary data such traffic, weather, pollution, biodiversity, 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.

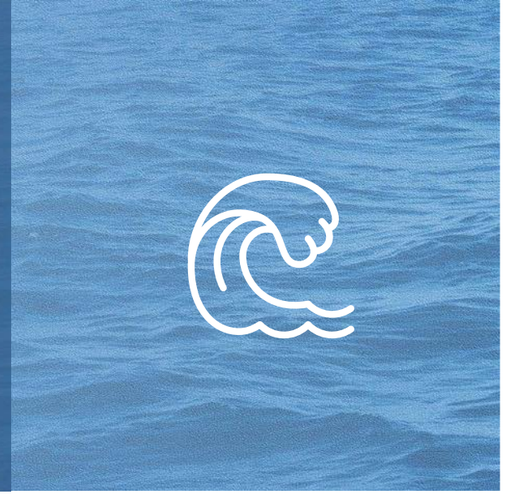
Resources:

European Commission: Europe's Digital Decade
United Nations – Digital Cooperation Roadmap

06

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 2022[1])

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.

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[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

07

Gender equality

SDG - 5, 17

Further reading:

European Institute for Gender Equality (EIGE) – Gender Mainstreaming

EIGE (2015) Supporting reconciliation of work, family and private life: Good Practices Publications Office of the European Union

United Nations – Human Rights: Gender equality and women's rights

World Sailing Trust – Women in Sailing

Melanie Symes - Innovamarina

"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 photos representing the sector. Are women represented as the skippers aboard boats or passively lounging on the foredeck? Are they involved equally in technical repair work or rarely pictured 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 remote working and schools closed. This leads to even more time constraints and so good practice can ensure that meetings or staff communications, etc. are considered accordingly to ensure inclusivity.

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.

Recommendation/Ideas:

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

08

Redes y comunidades

SDG - 10, 11, 17

Melanie Symes - Innovamarina

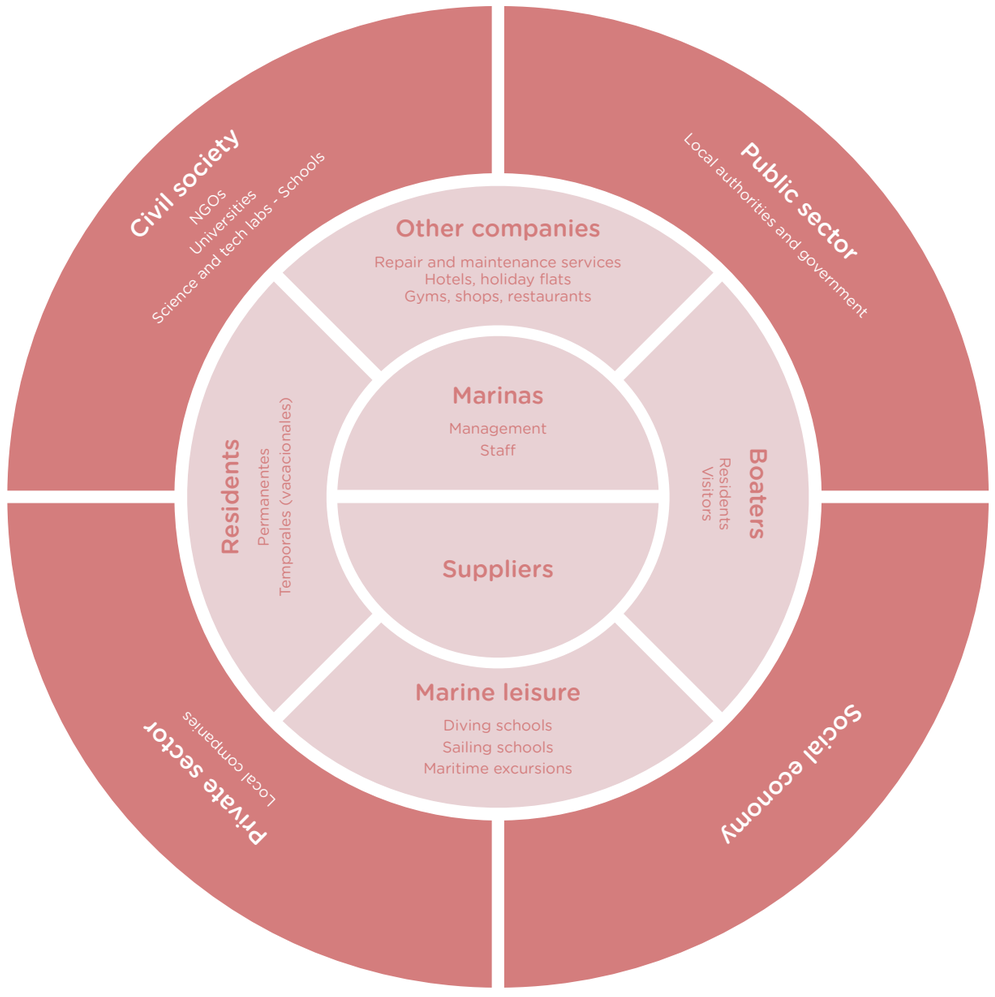
Collaboration, collaboration, collaboration.

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 faired 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.

Benefits of creating communities and networks



Collaboration, collaboration, collaboration.

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

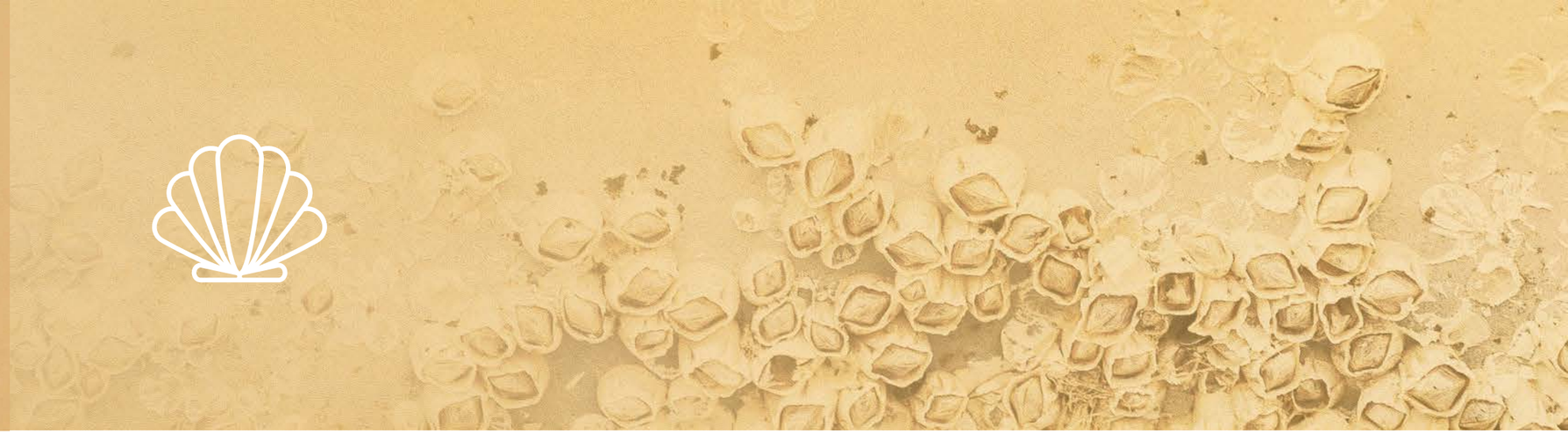
Resources:
Examples of International Boating/Marina Networks:

European Boating Industry (EBI)
International Council of Marine Industry Associations (ICOMIA)
TransEurope Marinas

09

Biofouling

SDG - 13, 14



José Luís 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 pollution[1] 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 project[2] 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.

[1] Accumulation 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 partnerships[2]
Invasive species protection – Green Blue RYA

10

Dredging

SDG - 9, 14

José Luís 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 turbidity[1], 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.

[1]Turbidity 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.

11

Resilence

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 some 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:

ONU (2015) Marco de Sendai para la Reducción del Riesgo de Desastres 2015-2030
European Commission – Climate action

12

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[1], 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.

[1]Se refiere a los proyectos de soluciones basadas en la naturaleza en la sección sobre la Educación Oceánica

Resources:

Regenerative Travel – How Marine Conservation and Tourism can Save our Planet
Resilience.org

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About us:

Melanie Symes - Innovamarina

With twenty-five years' experience in the nautical industry, working at a local and international level to encourage collaborative and responsible practices, Melanie promotes responsible and innovative marine destinations and assists in strengthening a supportive nautical culture.

José Luís Fayos - Global Management Consultoría SLU

José Luís Fayos is Technical Advisor with ANEN (Asociación Nacional de Empresas Náuticas), member of the ICOMIA Marine Committee and vice-president of the ICOMIA Sustainability Committee. 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.

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.

Innova marina