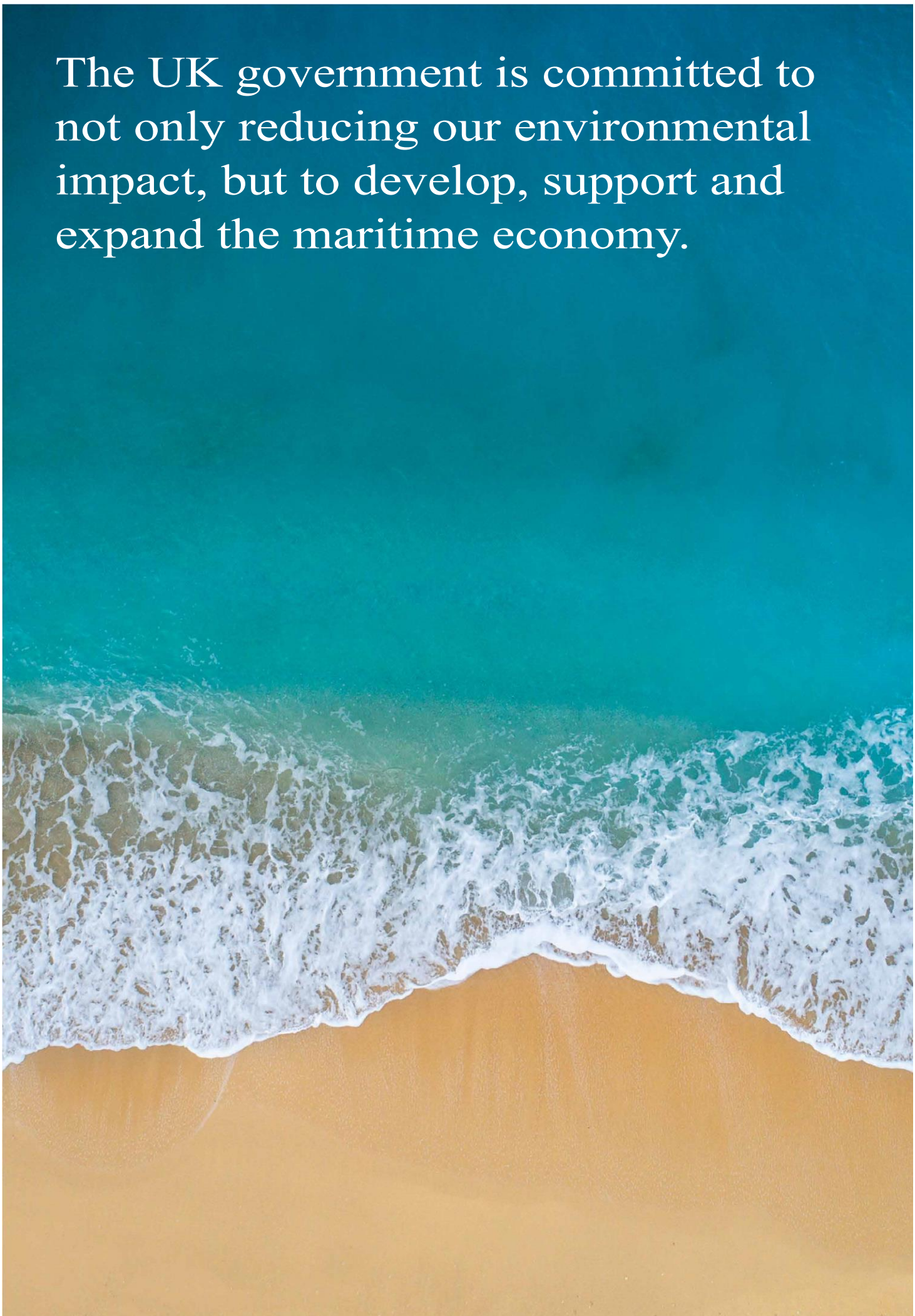
National Environmental Roadmap

Version 2 – April 2024

The UK government is committed to not only reducing our environmental impact, but to develop, support and expand the maritime economy.



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The British Marine Environmental Roadmap in 2019 set out the environmental regulatory pathway at the time, and with the passing of the Environment Act in 2021 and continued governmental pressure on achieving cleaner waterways, cleaner air and reduced waste, the pressures on reducing the environmental impact of the sector will continue to grow..

Executive Summary

The Recreational Marine Industry in the United Kingdom has always been a world leader, from design and manufacture, to the development of technology and materials and as such we have the resource, knowledge and ability to also to lead the way in the global challenge of moving to a more sustainable marine industry.

This document was originally developed to provide our members with a foundation upon which to begin tackling the many environmental challenges that we were facing as an industry. In 2020 this roadmap directly reflected the concerns that industry had, incorporating them with the governments agenda, aims and objectives. The roadmap formed the priorities of British Marine at the time in supporting the development of industry solutions in the six key areas that were highlighted by the survey of our members from both the inland and coastal sectors.

Now 4 years later and as a component part of a greater British Marine environmental strategy we have updated the roadmap to reflect the changes that have occurred within regulation and the industry during this time. The Environment Act in 2021 fired the starting gun on a whole raft of new rules and regulations, specifically targeted at achieving a generational improvement in our natural environment. These new rules and regulations are coming thick and fast, and will need increasing resources from companies to make sure they are suitable for our industry, reasonable in their implementation and then complied with at the same time the industry must also be aware of what is on the horizon, the biggest fundamental change to business for generations, moving away from carbon based energy to alternatives.

As the representative body for the UK's marine sector, British Marine are committed to helping our members successfully navigate these changes, our commitment is to:

- we will work with government to ensure enabling legislation is brought forward to support and to ensure a fair transition for the Marine Industry,
- we will support government objectives by communicating relevant information to the industry, for example on regulatory consultations, forthcoming changes, and key timelines,
- we will support the marine industries in their transition through the creation of a marine technology decarbonisation knowledge centre, which will include relevant industry research projects, case studies, reports, and opportunities for technology sharing and cross sector technology transfer,
- where there are gaps in provision or knowledge, we will continue to support the standardisation of new technologies to support decarbonisation and promote swifter technology uptake, and work with our industry partners to ensure we have the relevant data to help businesses make the right decisions,
- we will support businesses development of new technologies and solutions through identification and application support of relevant funding.

Background, Trends and Drivers

Since the publication of the first environmental roadmap in 2020 the industry has been on what can only be described as a rollercoaster, the pandemic in 2020 and 2021 shut down the country for significant amounts of time, and upon reopening there was a national reconnection with nature[1] which led to significant growth in participation in water based activities.

Since the end of the pandemic lockdown there has been a continued focus on environmental issues, Climate change has been the predominant focus and at COP 28 or the first time, countries agreed on the need to "transition away from fossil fuels in energy systems".

The text calls for this to be done "in a just, orderly and equitable manner". This is seen as an important recognition that richer countries are expected to move away from coal, oil and gas more quickly.

The agreement includes global targets to triple the capacity of renewable energy like wind and solar power, and to double the rate of energy efficiency improvements, both by 2030 and also calls on countries to accelerate low- and zero-emission technologies like carbon capture and storage.

Increased political focus has also been placed on the impact to air and water quality and plastic pollution and tackling water quality, noise pollution, single use plastic (SUP) and the reduction of chemicals and biocides harmful to the environment, all have been prioritised by the government.

We have seen the growth of environmental action groups, taking the concerns of the public on to the streets of countries around the world with direct action, including the vandalism of yachts in certain instances.

The UK Government has placed environment at the top of its priority list, not only with the June 2019 introduction of an amendment to the Climate Change Act (2008), legally committing the UK to a 100% reduction in greenhouse gases by 2050 from 1990 levels, as opposed to the 80% reduction set in 2008, but also with its April 2021 Sixth Carbon Budget, where the UK Government set down in law a new target to reduce emissions by 78% by 2035, compared to 1990 levels. The legislation was passed in June 2021 as The Carbon Budget Order 2021 (legislation.gov.uk) and only last year in March 2023 the UK Government published its Carbon Budget Delivery Plan setting out policies, timescales and delivery risks associated with its Carbon Budgets between 2023 –2037.

In 2018 the government produced *A Green Future: Our 25 Year Plan to Improve the Environment* and at the end of January 2023, the Government published the UK's Environmental Improvement Plan 2023 (the EIP) - the first revision to the 2018 25-Year Environment Plan. The EIP is a critical pillar in the Government's environmental strategy and sets ten goals intended to stop the decline of nature, and to reverse it whilst also declaring that we will be the first generation to leave the environment in a better state than that in which we found it.

In setting out the 10 goals, the EIP has no key headlines for the marine environment, but specific marine components have been deliberately woven into each of the sections of the report plan.

The ten goals are as follows:
Goal 1: Thriving plants and wildlife
Goal 2: Clean air
Goal 3: Clean and plentiful water
Goal 4: Managing exposure to chemicals and pesticides
Goal 5: Maximise our resources, minimise our waste
Goal 6: Using resources from nature sustainably
Goal 7: Mitigating and adapting to climate change
Goal 8: Reduced risk of harm from environmental hazards
Goal 9: Enhancing biosecurity
Goal 10: Enhanced beauty, heritage, and engagement with the natural environment

The Environment Act 2021 has now been passed, an enabling act this gives the government powers to make targets, plans and policies in numerous areas of environmental protection which had not been possible before, and the Office for Environmental Protection (The OEP) has now been set up, a public body that protects and improves the environment by holding government and other public authorities to account. The UK governments Marine Plan for a sustainable marine and coastal future is continuing its development with the consultation on Marine Net Gain now completed, and making its way into legislation, placing responsibilities for environmental improvement into all waterside developments.

We are also at the stage where government is working to ensure that we are continuing to truthfully talk to our customers, the Competitions and Markets Authority have now introduced the Green Claims Code, which sets out 6 key points to check that your environmental claims are genuinely green and provides a

[1] People and Nature Survey: How has COVID-19 changed the way we engage with nature? - Natural England (blog.gov.uk)

framework for businesses to make environmental claims that help consumers make informed choices.

Objectives and Scope

British Marine made the environment one of its key strategic commitments in the 2019 National Agenda and the original Environmental Roadmap was the start of British Marine's environmental commitment. The pandemic unfortunately got in the way of the first roadmaps second stage of industry engagement but behind the scenes the work has been continuing. Being released in conjunction with this updated roadmap is the British Marine Decarbonisation Hub, a marine specific resource giving industry the tools, guidance, advice and support it needs to face the challenge of Carbon Net 0, whilst the overarching Decarbonisation Project is also supporting the industry with the continued development of new technical standards, environmental research, upskilling training courses and industry representation with relevant stakeholders.

The challenges faced by the recreational marine sector haven't changed, they have however grown in importance and the pressures arising from these challenges are becoming more focussed with less time to achieve change. The industry must continue to focus on the development of a long-term sustainable business model for the future and the protection of the marine environment upon which our industry relies, continues to be our priority. Without clean healthy seas, strong biodiversity and a thriving coastal leisure/industry base, the industry will face an uncertain future.

The objectives of this roadmap update are to:

- Provide continued focus and support allowing the marine industry to achieve environmental sustainability.
- Highlight resources and technology to support the sector and businesses.
- Set out a framework and foundation upon which environmental initiatives and solutions can be built.

It will reflect the concerns of the members based on the original results of the environmental survey, whilst bringing in updated Industry best practice and social trends. The roadmap will continue to lay out the pathway and timetable for the recreational marine industry to come together to consider requirements, best practise, set achievable targets and prioritise workstreams and also identify those areas in which the industry needs to continue its focus on innovation and research and development to find manageable solutions where none are currently present.

Approach

Originally the consolidated output of a series of workshops that took place with members of British Marine during 2019/20 with over 360 industry members from over 200 marine companies and businesses contributing to the development of the roadmap through their participation in these workshops. We will include the work contained within the technology and Innovation Roadmap released by British Marine in 2023, which highlighted environmental concerns as the industries focus.

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Members Environmental Survey

Summary

British Marine started with a list of environmental challenges facing the industry, those challenges were then segmented into the timeframes, Short, Medium and Long Term.
British Marine members were then asked to review and prioritise those challenges at over 30 external events, council meetings, association meetings, AGMs, and workshops during 2019 and early 2020.

The results from the workshops were correlated, highlighting the key concerns of our members within each timeframe.
This Environmental Roadmap is based on the results of this survey and current regulatory requirements, whilst also factoring environmental social trends and proposed government regulatory changes.

Environmental Survey Results

The following priorities were highlighted by the Survey within the timeframes set out.

Timeframe		*Industry Priority*
Short Term:	1 – 5 Years	Recycling and Waste
Medium Term:	5 – 10 Years	End of Life Vessels
Long Term:	10 – 25 Years	Air Pollution

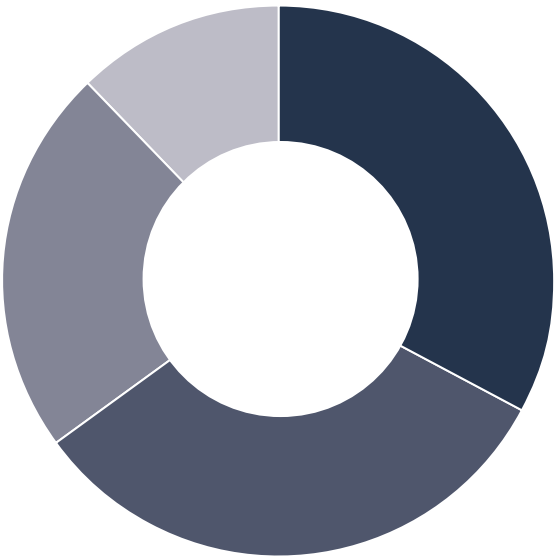
Full Survey Breakdown

Short Term 1–5 Years

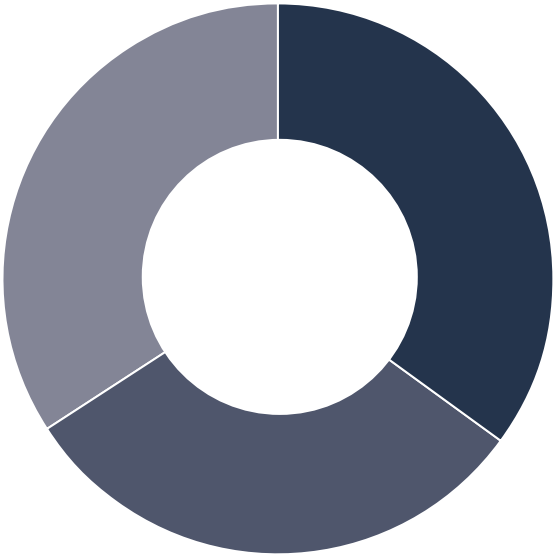
Recycling, which has been driven in part by greater public awareness and pressure and the increased cost of waste management was highlighted as the top challenge. Water and Air pollution were also key concerns reported, which was aligned with the governments focus and prioritisation at the time of the survey and the expected resource requirements needed to meet these challenges. Materials were also cited, availability of certain traditional boatbuilding materials are becoming more challenging along with the increased supply costs of some metals, whilst the phasing out of some materials used in the build process, which are being classed as more hazardous to human and environmental health, was also seen as a risk.

Medium Term 5–10 Years

Finding a solution for End of Life (EOL) vessels has come more into focus as an environmental challenge in the last few years, this has translated into the results of the survey with EOL being the highest rated environmental challenge to the industry in the medium term. Both Water and Air pollution were again raised which reflects industries view that the required changes in improvements to both areas will need to happen over a sustained period.



Recycling	33%
Water Pollution	32%
Air Pollution	23%
Materials	12%



End of Life Vessels	35%
Water Pollution	31%
Air Pollution	34%
No Response	0%

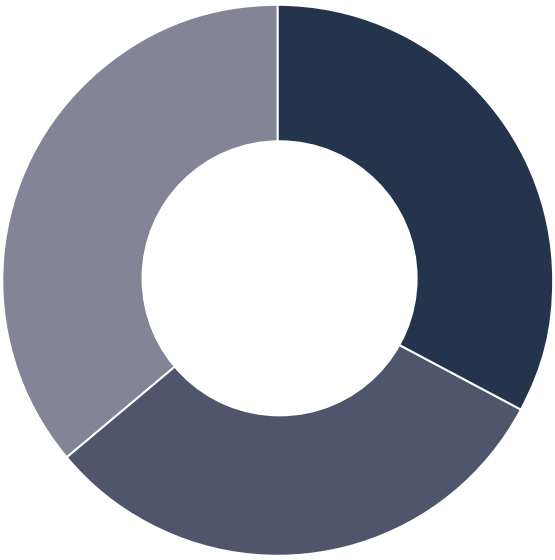
Full Survey Breakdown (continued)

Long Term 15–25 Years

Water and Air pollution remain an industry challenge in the long term, separated by Climate Change. The industry is already seeing the business challenges associated to climate change with the impacts of changes in weather patterns leading to both increased flooding and droughts, and the extreme weather events that are increasing in number but the long term impact was also highlighted with the risk of sea level rises that would be damaging to the industries infrastructure given the large percentage of coastal marine businesses being based on or adjacent to the shoreline.

Use of the Data in the Roadmap

Based on the response from members, the roadmap will set out the current regulations and future government objectives within each area of environmental challenge, detailing what objectives need to be met by industry to comply with the regulations and targets both set by government and indicated as future expectations.



Climate Change	33%
Water Pollution	31%
Air Pollution	36%
No Response	0%

Implementing Environmental Change

Overview

The environment, sustainability and biodiversity are now key components of UK government policy and regulation. As an industry we are seeing increasing legislative requirements that will need to be complied with, and future environmental targets and practices that will need to be prepared for. We also have a customer base who are evolving and will be expecting clean, environmentally friendly, and greener products than what currently exists.

The recreational marine industry is reliant on a marine environment that is sustainable, has a thriving ecosystem and is a place where people want to spend their leisure time, therefore we need to be proactive and consider what can be achieved within each of our individual businesses.

The survey subjects and members concerns have been looked at as individual areas that need to be addressed and with key points to focus on. This is still a base platform which highlights the challenges faced, and how they can be dealt with but given the breadth of the industry there may be other areas in which a business will have to focus resource.

The recreational marine industry is reliant on a marine environment that is sustainable, has a thriving ecosystem and is clean, a place where people want to spend leisure time.

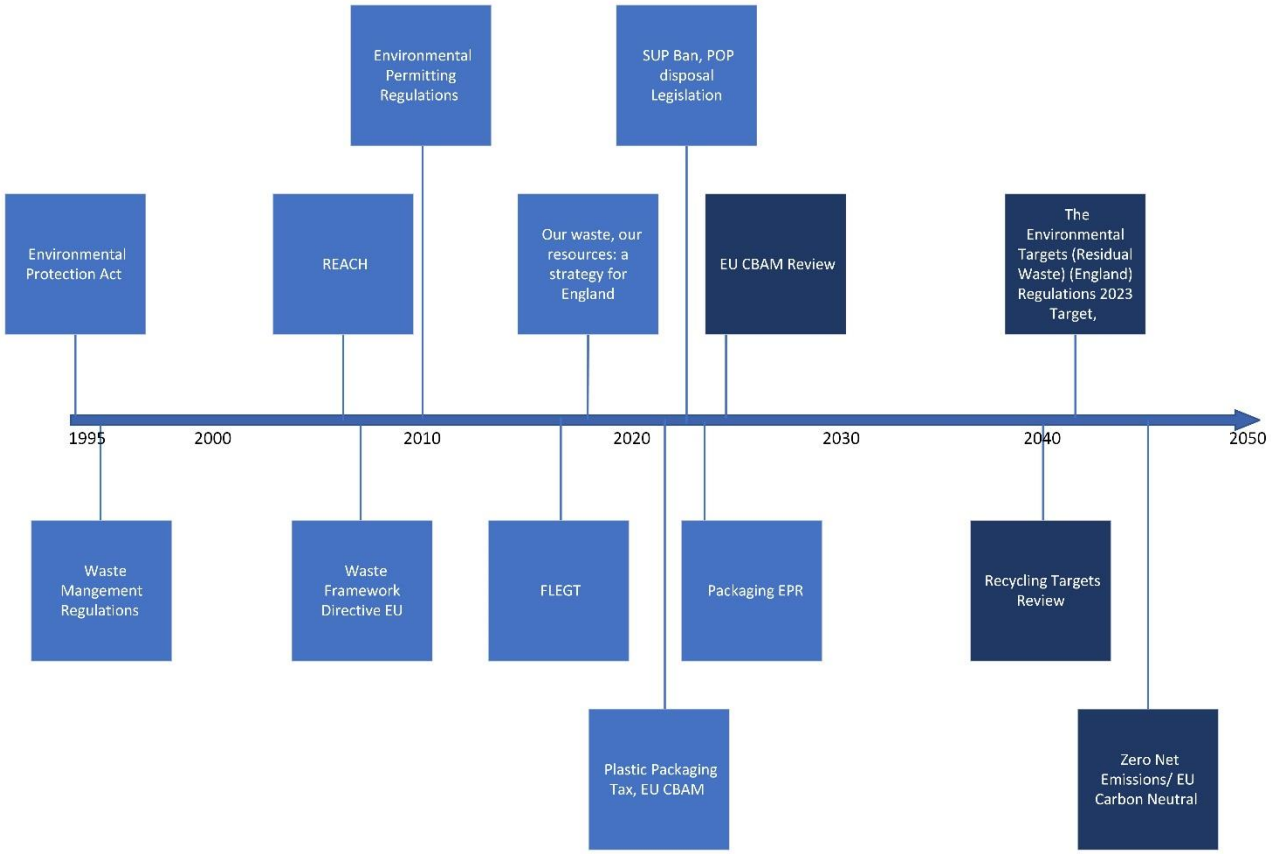
Environmental Timelines – Legislation and Set Targets

Recycling and Waste Management
Water Pollution
Air Pollution
Materials
End of Life Vessels (EOL)
Climate Change

Waste Management and Recycling

Since the release of the last edition of the roadmap we have started to see the changes in legislation and taxation that was predicted. We have seen the 2022 introduction of the Plastic Packaging Tax, followed by the 2023 ban on certain single use plastics, and there is now the upcoming extended producer responsibility for packaging with its implementation starting in 2024.

Waste management and recycling is still a sector priority following the changes in consumer awareness of the results of mass production, materials use, the landfilling of waste and the impact of waste streams on the marine environment, the sectors challenges in this area are increasing.



Current Position

The governments strategy - Our waste, our resources: a strategy for England , released in 2018, has set out the national strategy and we will continue to see greater levels of legislation, taxation and enforcement being implemented to meet the strategy and its objectives.

The Government through implementation of the new regulation, The Environment Act 2021, has targeted an increased reduction in waste and an increase in recycling as parts of its key objectives. The Environment Act specifically gives power to national authorities to make regulations about Producer Responsibility obligations, including requiring payment towards the costs of disposing of products and materials. The marine industry will therefore need to increase focus in the management of both these areas to keep up with evolving requirements.

The Environmental Targets (Residual Waste) (England) Regulations 2023 came into force in January 2023 setting the target for the reduction of residual waste (excluding major mineral wastes) on a kg per capita basis by 50% by 2042 from 2019 levels.

UK-wide producer responsibility (PR) schemes are already in place for four waste streams, putting a level of financial responsibility on producers for their goods at end-of-life. These are:

- Packaging waste;
- End-of-life vehicles (ELV);
- Batteries and accumulators;
- Waste electrical and electronic equipment (WEEE).

And the government is now reviewing the existing EPR schemes whilst committing to the development of new areas for Extended Producer Responsibility (EPR) schemes to be introduced.

Waste is included within Greenhouse Gas (GHG) Protocol Scope 3 emissions and as work continues internationally on Carbon Border Adjustment Mechanism (CBAM) type legislation, the need to reduce waste streams to limit carbon lifecycle emissions levels and subsequent import and export taxes is going to become essential.

Actions to be Taken

Businesses need to ensure compliance with the current regulations and standards for all waste and recycling whilst preparing for the increasing requirements that are expected to fall within the new regulations being developed. Increased targets for waste streams and recycling will need proactive actions or increased financial burdens on industry will be the result.

Businesses, manufacturers and marinas need to look at in house operations and see where improvements can be made in waste separation, reduction in use of SUP, choice of packaging and product design materials.

There needs to be improved management of hazardous materials in industry whilst within product design and manufacture there must be active reduction in use of raw materials and increased use of recycled material.

More information on the new Plastic Packaging Tax and Packaging EPR can be found on the BM website.

Whilst CBAM type regulation is still at its birth, the need to provide Carbon Lifecycle Analysis (CLA) or Product Environmental Footprint (PEF) data or certificates is growing, especially within public sector procurement and businesses will find themselves under increasing pressures to be able to produce numbers, be it for larger companies supply chain requirements, due to their obligations changing with regard to reporting or in order to supply the public sector.

Future Cost and Impact

In England Landfill tax has increased from £94.15/tonne in 2020 to £102.10 in 2023, it will rise to £103.70 in 2024. Scotland is similar with a raise from £102.10 in 2023 to £103.70 in 2024.

Plastic Packaging Tax rates were £210.82 per tonne from 1 April 2023 rising to £217.85 per tonne from 1 April 2024.

With regard to CBAM type costs currently the EU Emissions Trading scheme (ETS) price is around 85 EUR (per tonne of CO2e) with an expected range of 100-150 EUR by 2030.

Reduction of Waste - Environmental Impact Single Use Plastic and other polythene products (many used in packaging) are causing extreme damage to the marine environment and its eco systems. This also has the potential to affect public health –as microplastics are now making their way into the food chain. Reduction in the use of certain materials will assist with the reduction of damaging waste streams.

Resources and Technology to support reductions in Waste and improve Recycling

The 2023 Technology and Innovation Roadmap identified a future vision of the industry along with the challenges in the way of achieving this future. Many of the challenges were around waste:

Customer Expectations

It is clearly understood by the respondents that customers will be expecting clean, environmentally friendly, and greener products than exist currently.
Vessel Design
Design has to be aligned with these expectations for sustainability, end of life and ease of use; new propulsion systems, energy efficiency and new recyclable materials need to be embedded at the design stage in order to take advantage of the opportunities presented.

Manufacturing
Manufacturing processes will need to change in order to meet the demands for new materials and less carbon usage; requiring more automation, lower energy usage, and new manufacturing techniques, such as 3D printing, Industry 4.0 and augmented reality.

End of Life
End of life focus is on recycling and sustainability.[2]

The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future waste objectives and targets.

Greater use of recyclable and reusable materials and products.
Waste is a GHG Scope 3 Emission, and increased pressures on the costs of waste disposal and how companies deal with business and other manufacturing waste will become a financial risk., but we are seeing the industry take innovative new steps to mitigate these risks, from the use of manufacturing waste to power on site energy production, at Princess Yachts Plymouth Yard[3] and Sunseeker Poole [4], through to Williams Jet Ribs working with Spared to utilise factory plastic waste into furniture[5]

Eco-design and manufacture
From the picking of alternative materials[6] to maximising materials efficiency in manufacturing and streamlining of procurement there are many ways to change your waste and recycling affects through design and manufacturing which can positively affect a companies financial and environmental impacts.

Use of alternatives to hazardous materials and products
The consequences of disposing of hazardous waste are becoming more clear and as pressures rise on the government, following its declaration to be the first generation to leave the environment in a better state than that in which we found it, we will start to see a need to transition to alternatives to some of the existing materials and products we use. The supply chain is looking to meet this challenge and we are seeing new more environmentally friendly and non-hazardous products coming on to the market[7]

Education and awareness for consumers
It is clearly understood by industry that customers will be expecting clean, environmentally friendly, and greener products than those that exist currently. Businesses face future risks if they are not seen to be meeting these changing customer expectations, but we must also raise awareness of what we are currently doing as an industry, whilst we have some more difficult challenges to meet there are some aspects in which we could be raising more awareness of what successes we have already achieved.

Princess in addition to their onsite biomass have been working on improving hull efficiencies, resin infuse their hulls, are introducing battery powered hotel services (no generator) and have trialled using FRP waste to mould their internal non structural GRP components[8] and Williams Jet ribs in addition to their tie up to Spared have approved their engines to use HVO, carried out LCA's on some products and are dedicated to move towards a carbon neutral business footprint, creating 100% recyclable products, built using environmentally friendly materials, powered by zero emission propulsion systems.[9]

The marine supply chain is also embracing the alternative materials revolution, Marine Hygiene are packaging their products in ePET (recycled polyethylene terephthalate) or aluminium, with recyclable and compostable labelling, RS Sailing has stopped wrapping its vessels in plastic during manufacturing transport, and Navico have transitioned to 100% recyclable and sustainable packaging in their new products.

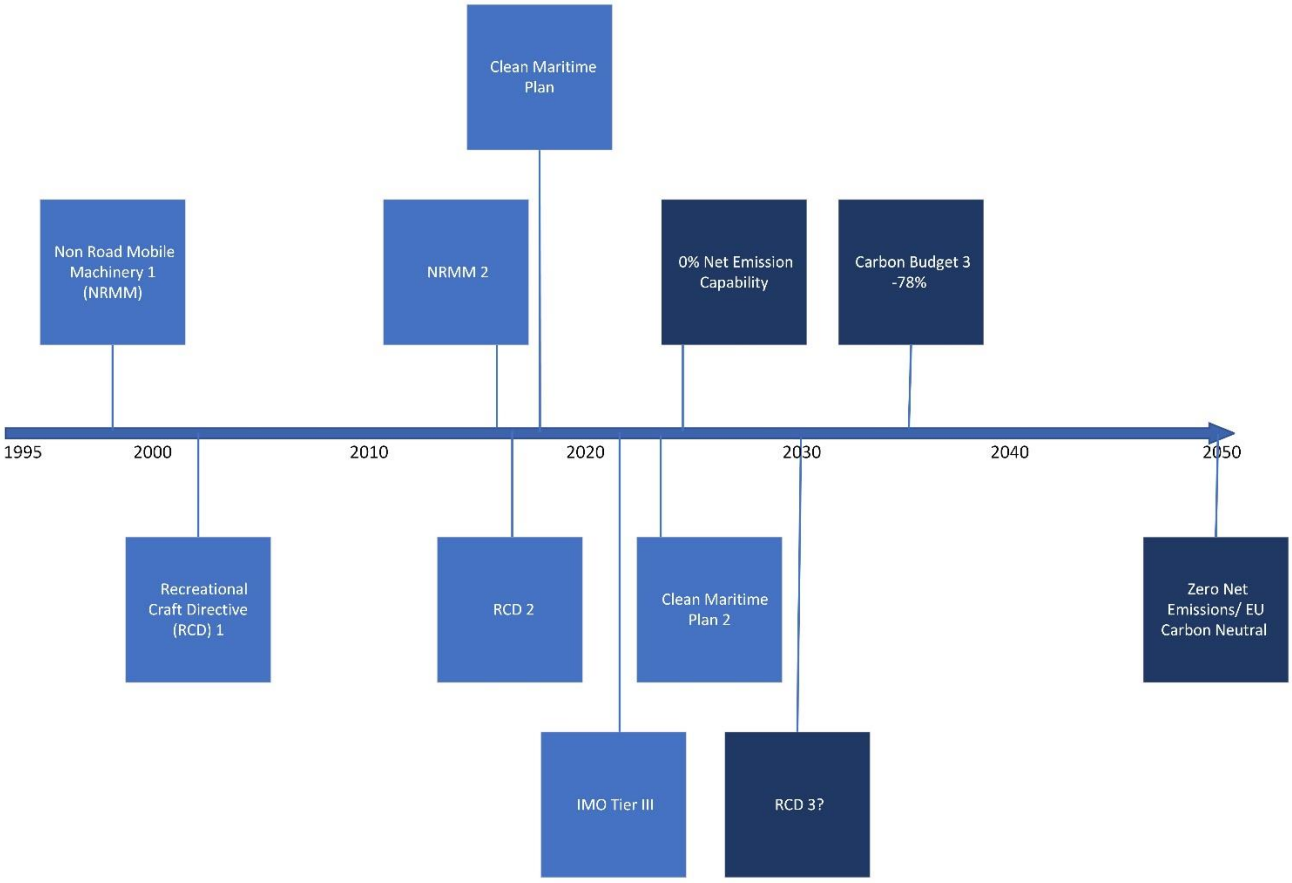
[2] Technology and Innovation Roadmap - April 2023
[3] https://brochures.princessyachts.com/story/esg-report/page/3/3
[4] https://www.sunseeker.com/luxury-yachts/innovation
[5] https://marineindustrynews.co.uk/williams-jet-tenders-plastic-waste/
[6] https://www.natwest.com/business/insights/sustainability/climate/purchasing-alternative-materials-with-lower-embodied-emissions.html
[7] https://thegreenblue.org.uk/you-and-your-boat/info-and-advice/water-pollution-prevention/choosing-an-antifoul/
[8] https://brochures.princessyachts.com/story/esg-report/page/3
[9] https://www.williamsjettenders.com/wp-content/uploads/2023/03/LCA-Summary-TuboJet-325.pdf

Air Pollution

The UK Government has set an ambitious target of Net Zero carbon emissions by 2050 aligned with a national strategy on how to achieve this, The 2019 Clean Air Strategy set out the actions and objectives:

- Action to reduce emissions from transport
- Action to reduce emissions at home
- Action to reduce emissions from farming
- Action to reduce emissions from industry

This roadmap will continue to focus on transport and industry considering the practicalities of both short and long term targets and enable British Marine to work with members, regulators and government to ensure government objectives are achievable.



Current position

A multitude of differing sets of emissions regulations that can differ based upon vessels, use, length, tonnage and operational area have created a fractured, complicated emissions framework, this combined with a lack of in use vessel regulation or enforcement has led to unknown quantities of propulsion emissions from the sector. Current emissions regulations in the sector include, Recreational Craft Directive (RCD) 1, RCD 2, Non-Road Mobile Machinery (NRMM) Regulations 1, NRMM 2, International Maritime Organisation Tier I, II and III.

The government has committed to driving down emissions from ships and reducing the impact of emissions from the maritime sector on the environment and public health. In 2019 the government published Maritime 2050 with the objective that "*in thirty years, the UK maritime sector will have negligible wider environmental impacts, with minimisation integrated into the full ship life cycle from design and construction to operation." "In 2050, zero emission ships are commonplace globally. The UK has taken a proactive role in driving the transition to zero emission shipping in UK waters and is seen globally as a role model in this field",*

This policy document was soon followed by the Clean Maritime Plan which set objectives for the sector to achieve:

By 2025 we expect that:

i. All vessels operating in UK waters are maximising the use of energy efficiency options. All new vessels being ordered for use in UK waters are being designed with zero emission propulsion capability. Zero emission commercial vessels are in operation in UK waters.
ii. The UK is building clean maritime clusters focused on innovation and infrastructure associated with zero emission propulsion technologies, including bunkering of low or zero emission fuel.

By 2035 we expect that:

iii. The UK has built a number of clean maritime clusters. These combine infrastructure and innovation for the use of zero emission propulsion technologies. Low or zero emission marine fuel bunkering options are readily available across the UK.
iv. The UK Ship Register is known as a global leader in clean shipping and the UK is home to a world-leading zero emissions maritime sector, with:
a. a strong UK export industry
b. cutting-edge research and development activities
c. the global centre for investment, insurance and legal services related to clean maritime growth.

The Clean Maritime Plan has been revised and it is expected to be re-released in the next few months.

IMO Strategy - The International Maritime Organization (IMO) adopted the first set of international mandatory measures to improve ships' energy efficiency in July 2011. Since then, IMO has taken additional action including further regulatory measures, the adoption of the Initial IMO GHG strategy in 2018, and, in 2023, the revised Strategy on Reduction of GHG Emissions from Ships. It is envisaged that a review of the 2023 IMO GHG Strategy will be finalized when the Marine Environment Committee meets in autumn 2028, with a view to adoption of the 2028 IMO Strategy on reduction of GHG emissions from ships.

RCD 3 - The EU has set a new target for 2030 of reducing net greenhouse gas emissions by at least 55% compared to levels in 1990 and it has been confirmed that there is a demand that RCD 3 has "ambitious environmental rules" but the process for review will only start in 2024, as such it is expected that the discussion on what this will consist of will take place in 2025-2028/9 leading to finalisation in 2029/30 and publication in 2030+.

Clean Air – Environmental Improvement Plan - Transport emissions are decreasing yet remain very significant sources of nitrogen dioxide and PM 2.5 emissions. A number of high-profile policies have been introduced to tackle these emissions, for example the creation of clean air zones in cities across the UK, and the restriction on the sale of new petrol/diesel-fuelled cars from 2035.

Much of Government policy has been set out in its Transport Decarbonisation Plan published in 2021, and the scale of the policy solutions within this are significant, presenting many opportunities for commercial innovation and delivery.

Finally, in relation to shipping emissions, the EIP set out the Government's plan to consult on extending the North Sea Emission Control Area, in which shipping must adhere to strict emissions limits; establish a 'course to zero' strategy for domestic shipping, which is expected to include indicative decarbonisation plans for the domestic shipping sector and is promised to be released later this year, British Marine will analyse this at publication and update members shortly after publication.

Actions to be taken

The primary actions will be in the design and construction of new vessels, maximising energy efficient design and research into alternative fuels and propulsion systems, but due to the long lifespans of vessels there may well be change requirements for the existing fleet, including retrofitting and replacement of existing propulsion systems.

A call for evidence *accelerating the adoption of zero or near zero emission propulsion systems* is expected to take place in early 2024, and we would expect all members to be interested in feeding into this in order to ensure that the speed of transition is one that is achievable for the industry.

In 2021 the Carbon Trust released the report, Roadmap for the decarbonisation of the European recreational marine craft sector providing a roadmap for the industry and policy makers to achieve decarbonisation, and in November 2023 the International Council of Marine Industry Associations (ICOMIA) released their report Pathways to Carbon Emissions Reductions in Recreational Boating, a study into the Lifecycle Emissions from craft in the recreational sector with alternative propulsion technologies, giving us much of the data that had previously been missing to help the sector plan.

Future Cost and Impact

The department for transport has indicated possible future policy development in this area during their Air Pollutant Emissions from Domestic Vessels and Inland Waterways Call for Evidence. Whilst confirming that the development of any new policy measure(s) will focus on what is proportionate and technically-sound examples of possible interventions included the Introduction of financial incentive or lever to reduce emissions and the Introduction of specific regulations for appropriate domestic vessels.

Reduction of Air Emissions Transport – Environmental Impact

According to the National Atmospheric Emissions Inventory (NAEI), emissions from domestic shipping (ships that start and end their journey in the UK) accounted for 10% of the UK's total domestic NOX emissions, 2% of PM2.5 and 7% of SO2 in 2016.

Resources and Technology to support Transport Air Emissions reductions

The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets.

Fuel Additives [LINK TO HUB]
Alternative Fuels [LINK TO HUB]
Diesel Hybrid Propulsion [LINK TO HUB]
Pure Electric Propulsion [LINK TO HUB]
Alternative Fuel Hybrid Marine Propulsion [LINK TO HUB]

Other transport emissions

Current Position

There are a number of other areas within the industry which contribute to transport emissions, from delivery trucks through to boatyard machinery, each of these areas have their own set of regulations that apply to the emissions. [LINK TO HUB]

- Yard machinery and Equipment
- Forklifts (diesel)
- Travel Lifts and Cranes
- Towing Tractors and Portable Generators
- Delivery Vans and Lorries

Emissions regulations for these types of equipment can be varied and have been brought in over a number of years, however there are numerous pieces of equipment that were put into use pre-regulation and no current regulation mandating upgrading or retrofitting.

Non-road mobile machinery (NRMM) covers a wide range of machinery which moves or is intended to move (whether self-propelled or not) and contains a combustion engine.

The government has chosen to encourage the updating and replacement of onsite NRMM through the removal of the ability of this machinery to use Red Diesel, increasing fuel costs linked to stimulating private investment in more efficient or alternative fuelled equipment and is seeking evidence in Q1 2024 on how non-road mobile machinery (NRMM) might decarbonise as part of the government's wider net zero ambitions.
https://www.gov.uk/government/calls-for-evidence/non-road-mobile-machinery-decarbonisation-options

Actions to be taken

Future Cost and Impact

The government is currently implementing more stringent emission standards which will be consistently applied across the wide range of engines used in NRMM from 2019 and drive a reduction in emissions with the turnover of the NRMM fleet. There is recognition that emission standards have delivered significant reductions in air pollution from NRMM and it is envisaged they will continue to be reviewed periodically to ensure they reflect what is technically achievable. The main focus is the turnover of the NRMM fleet, with no restrictions of fleet age there is a risk that government will be looking at the ability to retrofit technical solutions to emissions reduction for the existing fleets due to slow turnover.

Reduction in Transport Emissions – Environmental Impact

Globally and locally emissions contribute to the development of cancer; cardiovascular and respiratory health effects; pollution of air, water, and soil; soiling; reductions in visibility; and global climate change.

Resources and Technology to support other Transport Emissions reduction

The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets. [LINK TO HUB]

- Fleet turnover
- Fuel Additives
- Alternative Fuels
- Retrofitting of emissions reduction technology
- Pure Electric Drive
- Alternative Fuel Hybrid Drive

Reduce emissions from industry

Current Position

The UK government has released its Industrial Decarbonisation Strategy, published in March 2021 it sets out the transition to Net 0 of all industries in the UK. Primarily focussing on the higher emissions sectors initially, such as Steel, Cement and Energy Production it will then move on to other smaller sectors using a variety of levers.

Actions to be Taken

Businesses need to ensure compliance with the current regulations and standards for all emissions whilst preparing for the increasing requirements that are expected to fall within the new regulations being developed including the risk of GHG Protocol Scope 3 emissions being part of a future CBAM.

Increased targets will need proactive actions or increased financial burdens on industry will be the result.

Future Cost and Impact

Working in close collaboration with industry the government developed a series of sector roadmaps to set ambitious, achievable standards aimed at making UK industry world leaders in clean technology. The roadmaps have focused on the most polluting industries and those with the greatest potential to drive improvements in air quality and ca be found here: https://www.gov.uk/government/publications/industrial-decarbonisation-and-energy-efficiency-roadmaps-to-2050

Reduction in Industry Emissions – Environmental Impact

Globally and locally emissions contribute to the development of cancer; cardiovascular and respiratory health effects; pollution of air, water, and soil; soiling; reductions in visibility; and global climate change.

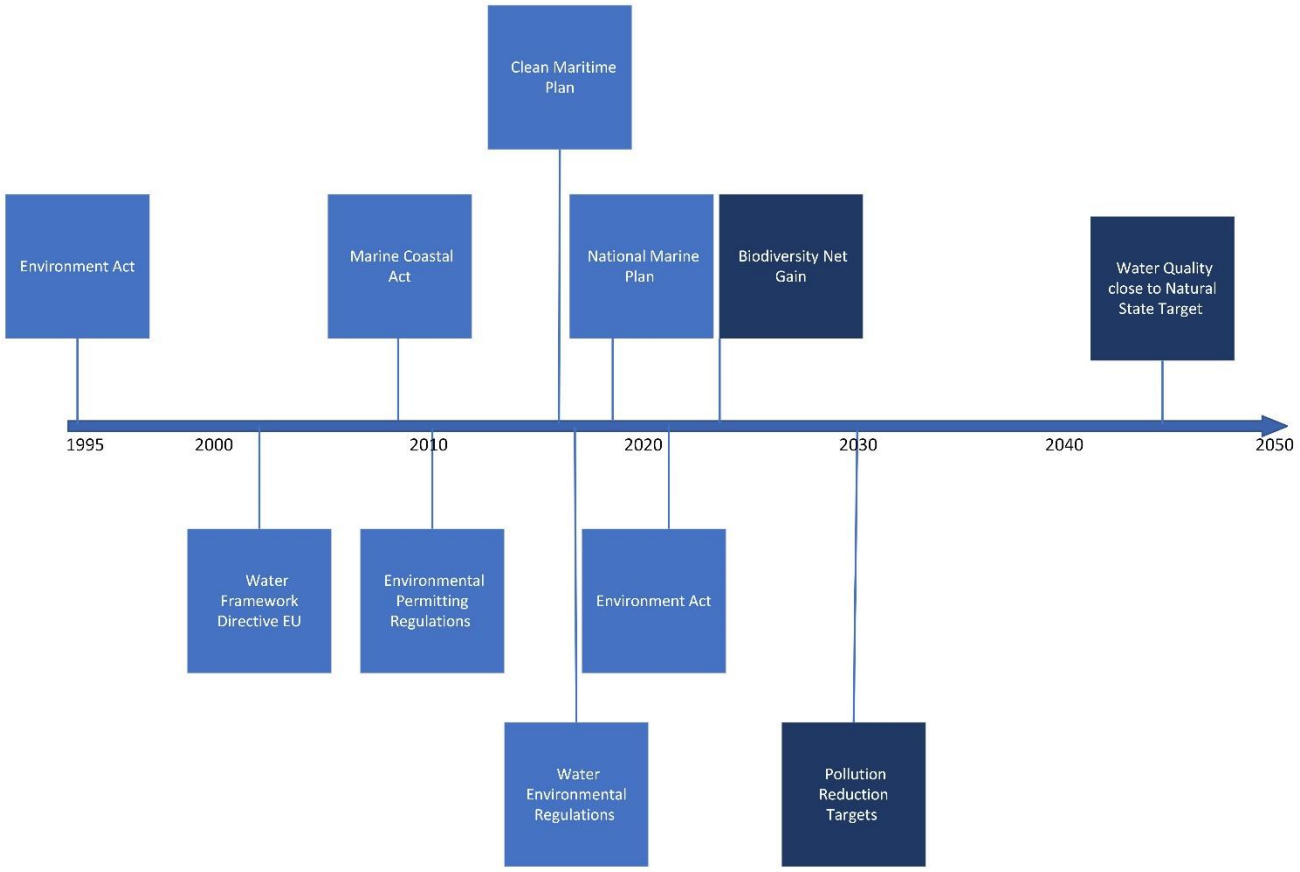
Resources and Technology to support Industry Emissions reduction

The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets. [LINK TO HUB]

- Clean power generation for business – Solar, Wind, Hydro
- Carbon offsetting Emissions

Water Pollution

Water pollution in Coastal, Estuarine and Freshwater environments is a focus of The Environment Bill, 25 Year Marine Plan and DEFRAS Biodiversity Strategy 2020. Without healthy waters the marine environment will continue to deteriorate to the detriment of our Industry. All recreational boating activity is reliant on a sustainable long-term marine economy.
With the National Marine Plan and Environment Bill, by 2045 the Government has targets to see all waters returned to as close to a natural state as possible.



Current Position

The Water Environment Regulations 2017 apply to surface waters (including some coastal waters) and groundwater (water below the surface of the ground). These regulations set out requirements to prevent the deterioration of aquatic ecosystems; protect, enhance and restore water bodies to 'good' status; and achieve compliance with standards and objectives for protected areas

While the Regulatory Framework is specific regarding 'Trade Effluent', which is deemed as any toxic runoff from a business, or facility entering the water, other areas of pollution are not covered, or if they are only in a general reference framework. The current regulatory framework has not kept pace with the increase in recreational sailing and the industry that supports it.

The 2021 Environment Act intends to achieve 4 key objectives with regard to Water Quality:

- Better collaboration between water companies through water management plans (WMPs)
- A statutory duty for management planning for drainage and sewage
- Further protection for environment where water changes can lead to damage, particularly flooding and abstraction
- Modernising the process for securing and modifying water and sewage licences

The government agencies responsible for environmental protection and regulations are now focusing more closely on the recreational marine industry and we are seeing more inspections and enforcement actions taking place, there is also an increase in the public reporting boatyard and marina water pollution to both the companies themselves but also environmental charities and regulators.

Actions to Be Taken

All marine businesses, and operators need to be complying with the current regulations and standards which govern water pollution. As an industry we are struggling in certain areas to keep pace with the legislation that is being introduced and we are awaiting even more stringent levels imposed to achieve the governments 2045 objective.

Boat manufacturers, marinas and boatyards need to consider their day to day operations in detail. Then begin to put into place procedures and equipment to mitigate water pollution from their operations, such as contaminated runoff and in water vessel discharge.

Future Cost and Impacts

The facilities and systems which can mitigate or eliminate water pollution from business need to be put into place or updated taking account of future increased limits. There will be a financial cost to businesses and advanced planning should be carried out. Current fines can be up to £250k but following public outcry over the water suppliers waste water pollution it is likely to increase exponentially.

Reduction of Water Pollution – Environmental Impact

A significant reduction in pollution levels will allow biodiversity and the marine ecosystem to begin recovering. This is will help offset CO_2 levels, contributing towards the targets for zero net emissions by 2050. This combined with a reduction in microplastics will support the marine food chains recovery. In addition, cleaner seas and beaches will encourage use and participation from the public in the marine sector.

Resources and Technology to assist with Pollution Reduction

The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets. [LINK TO WEBSITE]

- Installation of Capture and Filtration systems
- Improved onshore pump out and disposal facilities
- Increased use of less hazardous materials in manufacture and servicing
- Installation of onboard filters and waste treatment systems
- Education and awareness among users and consumers of pollution effect

The global supply and reserves of natural materials have been heavily impacted and, in some cases, decimated in the last century. Deforestation, an increase in need for agricultural land, and a steep increase in demand from certain sectors has put some wood in a critical position as a resource.

A global increase in demand for metals from copper & aluminium to rare metals used in 'smart' technology mean the industry is relying on the availability of resources with limited sustainability.

This does not just apply to the marine industry, but as a user the marine industry will need to be aware of the challenges and contribute towards solutions for this global problem.

Natural Material Resources

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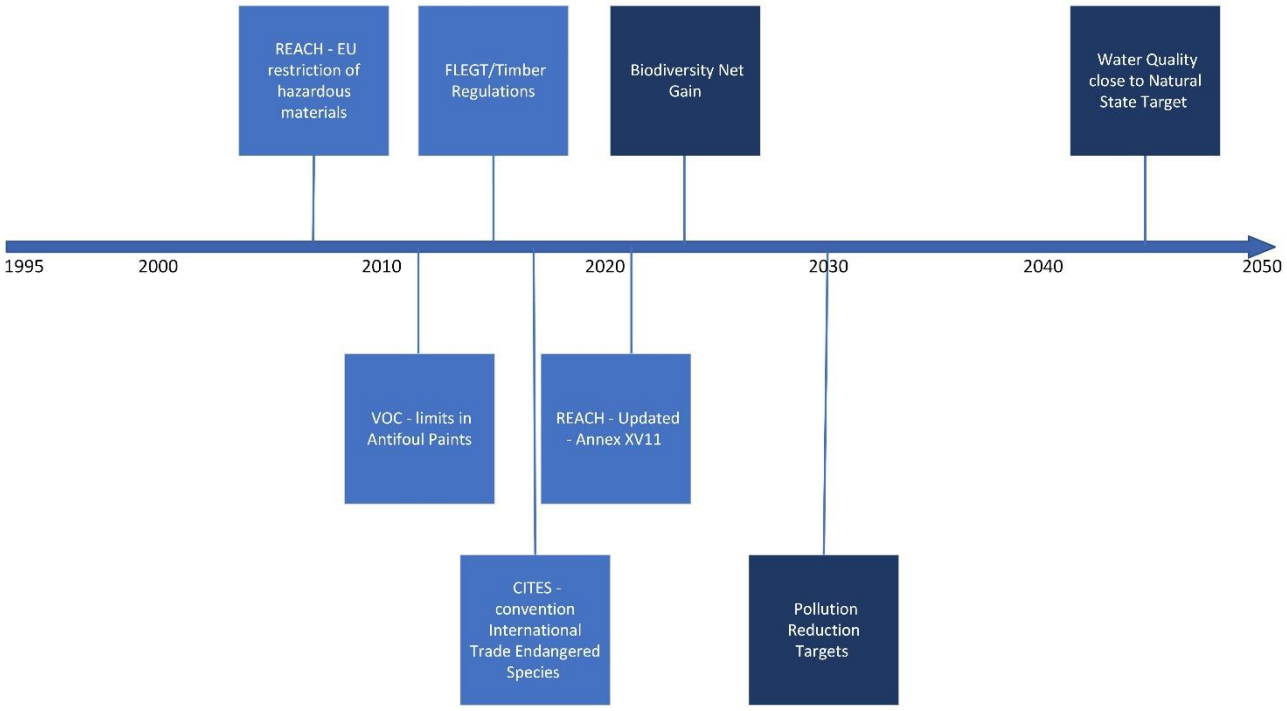


Current Position
The boatbuilding sector use a number of now limited hardwoods in various parts of a vessel, teak especially is found on a wide range of yachts and some rarer hardwoods are used in Super Yacht builds.

Rigging, deck and hull construction needs steel, aluminium, titanium and copper for machinery, frameworks and masts. An increase in 'smart' technology on yachts and more reliance on batteries for power will increase demand for rare earth metals.

We will be at a point soon where demand may outstrip supply with some materials and the sector needs to start expanding its reliance to more sustainable materials.

Actions to be Taken
Governments will be looking at where reduction in demand of natural materials can be found. There are current political restrictions on the import of some materials and whilst there is no current legislation to restrict what can be used, as supplies become more pressured costs could become prohibitive.

The marine industry needs to be considering what changes can be implemented on supply and demand to help with this, from design for recycling to greater efficiency in build methods, waste reduction and alternative materials, all need to be considered to ensure sustainable growth.

There is also the eco-design pressures that will soon become prevalent as governments place greater costs on manufacturers to built in recyclability and reusability to product design.

Increase in recycling and reuse of materials (covered in other sections) will also need to be implemented.

Future Cost and Impact
Scarcity of any material will lead to increased prices which will impact the industry. If the cost is passed onto the consumer, it will affect the sale of products. Should materials become in short supply or difficult to obtain, it will also affect timelines and delivery which would be detrimental across the sector.

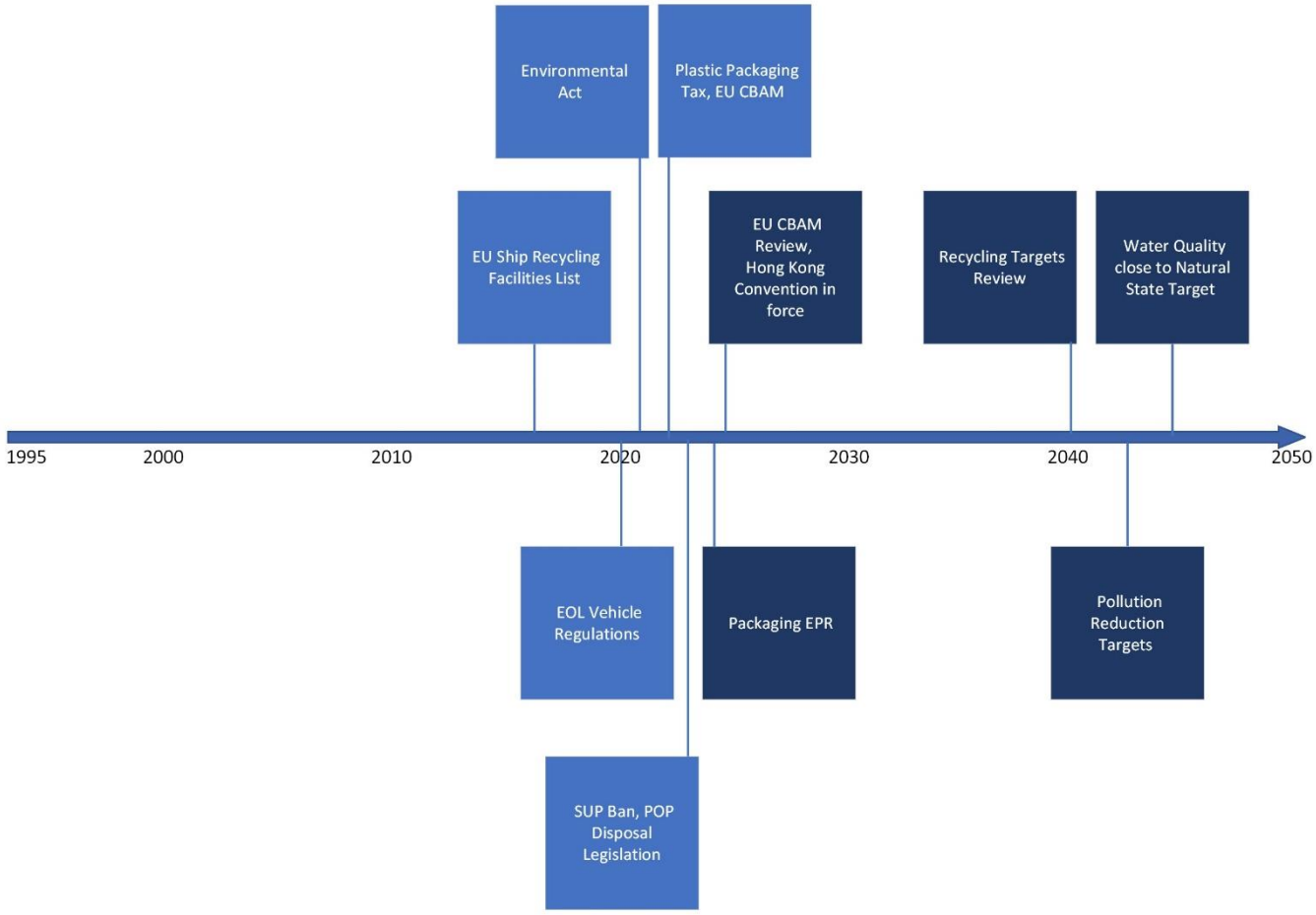
Reduced Supply of Materials – Environmental Impact As materials become scarce there will be a commercial need to look for other sources, could lead to mining in protected areas or habitats. Mineral extraction on the seabed could have a severe environmental effect on the marine eco system.

Resources and Technology to support alternative materials use
The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets. [LINK TO HUB]

- Use of sustainable alternative materials in vessel design
- Design and build more using advanced recyclable composites
- Aligning the technology used in racing yachts with mass produced yachts
- Working with other industries to develop environmental materials solutions
- Changing the perception of the consumer

End of Life Vessels

As an industry the issue of End of Life Vessels (EOL) and their disposal has continued to be a talking point.



Current Position

The current regulations mean a vessel must be disposed of in an environmentally responsible manner, there are now a number of organisation across the country where EOL vessels can be disposed of without adverse environmental impact. Further details can be found here: https://arcg.is/H1LTG

Unlike the automotive industry there is no requirement for vessel owners to insure or register a vessel.

For larger vessels the IMO Hong Kong Convention was ratified in 2023, following a 2 year implementation it will come into force in June 2025.

Actions to Be taken

The industry needs to recognise the continued pressure to achieve a circular 'Lifecycle' for recreational and privately owned vessels including small recreational craft like dinghy's and RIBS.

A national database for registration and ownership of privately owned vessels may need to be considered, as currently there is limited accountability for abandoning a vessel.

Legislation may need to be updated to incorporate accountability and responsibility for owners of vessels. This may include built in financial consideration for disposal as part of the cost.

There should be a clear consumer facing awareness programme highlighting the environmental impact of boat abandonment, to try and create a change in how people approach vessel disposal.

The development and creation of proper facilities for the responsible disposal, recycling and reuse (where practicable) for EOL vessels needs to continue its development, with continuing engagement across sectors to deal with this challenges as an FRP industry challenge and not solely marine.

Future Cost and Impact

If financial consideration for disposal of EOL vessels needs to be implemented, it will result in higher manufacturing costs that will be passed on to the consumer leading to a likely barrier to participation.

Currently the cost of disposing of abandoned EOL vessels fall on the owners of the land or facility where they are left. This is not sustainable for the industry and increased costs are passed on to consumers which also may have a market impact.

There will be resistance from many recreational boaters to the idea of a database and registration, as recreational sailing is currently lightly regulated however the industry concern is that it without a solution created and managed by industry the decision will be taken out of hands and a possibly unsuitable solution enforced.

Managed EOL Disposal – Environmental Impact Proper regulated disposal will lessen environmental damage particularly form hazardous materials, fuel and oils. The efficient breakdown, reuse and recycling of a high percentage of a vessel will benefit in other areas of the industry.

It will encourage better design and build practices as design for disassembly is factored into this process, and the demand and development of materials to reflect this will be an environmental benefit. Perception of the lifecycle will change from both industry and consumer point of view, which will be a benefit.

It will create an environmentally based new industry sector to manage EOL, with the additional benefit of being able to dispose of other non-marine products. The natural environment would see a great improvement as all EOL vessels from yards, to moorings to land sites could be cleared.

Resources and Technology to support an EOL Vessels solution

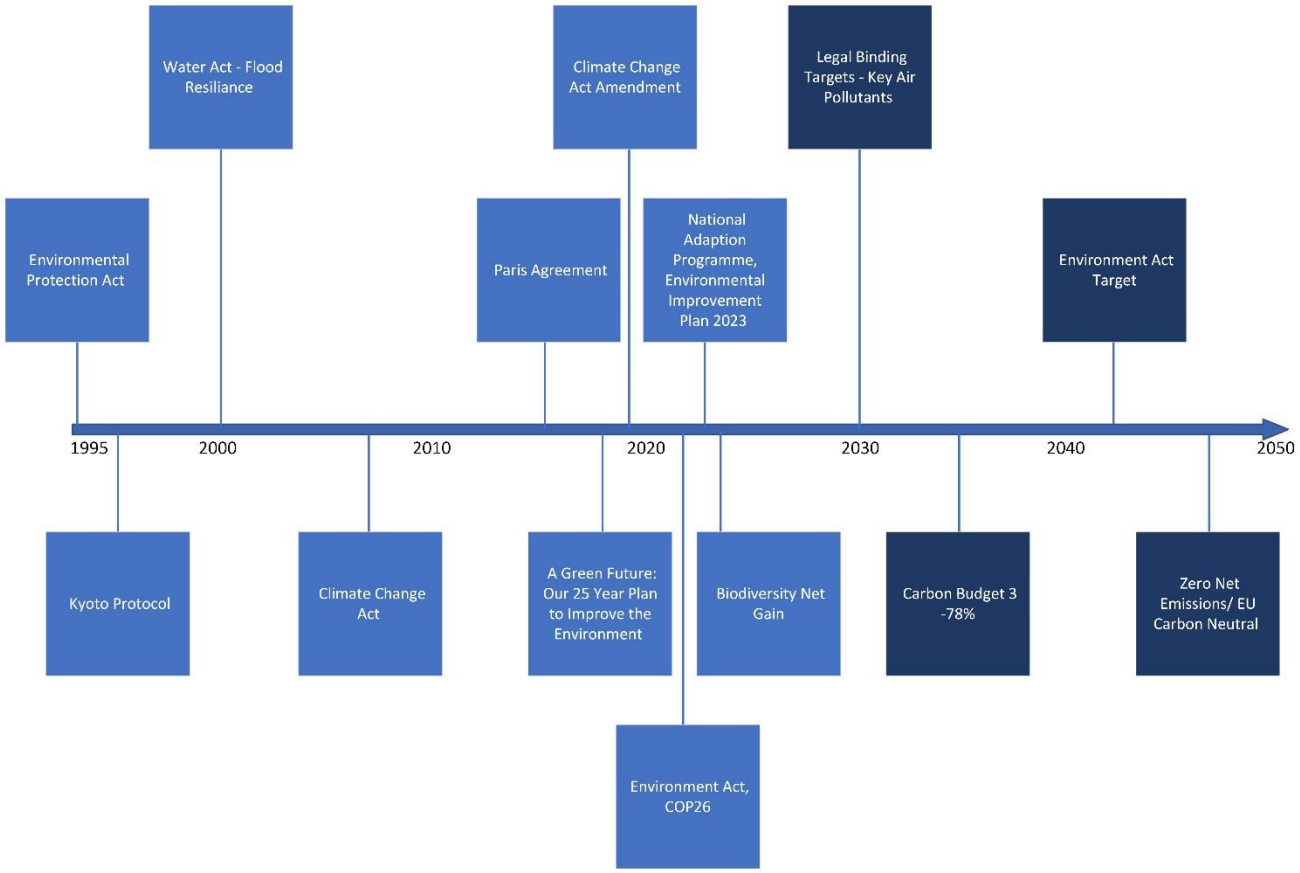
The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets. [LINK TO HUB]

- Range of eco materials available
- Design and build for EOL disposal
- Technology for recycling composites
- EOL vessel disposal funding

While climate change was listed as a long-term concern, we have been seeing signs both locally and globally of effects than can be attributed to it, flooding, more extreme weather and infrastructure damage and in some cases loss

Climate Change

There is no guaranteed timeline with which we can rely on to guide to the changes that will be occurring. Factors like rising sea levels, and increased sea temperatures will affect ecosystems and the physical landscape and our ability to rely on them as a business resource



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Current Position

A very high percentage of the marine industry is coastally based and often adjacent to the sea and affected by tides and flooding, any rise in sea levels would have an extremely severe impact on the industry on all levels.

If we can reduce the 'global warming' effect, which is an aim of the Paris Climate Accord then the impact will be lessened. All the sectors of this roadmap play a part in achieving this aim, and even small changes when put into a wider context can be significant.

The UK Government has now published its 3rd National Adaption Programme setting out the nations strategy and committing to taking clear and decisive action to maintain the country's resilience to the impacts of a changing climate. Section 5 covers Business and Industry and we would encourage all businesses to review when setting out their own risk registers.

Nearly all businesses are subject to climate change risk, from their workforces to business sites and their ability to reliably provide goods and services. The Technical Report of CCRA3 identifies physical risks to businesses from flooding, coastal change, extreme weather, water scarcity and high temperatures. Businesses are also affected by the resulting impacts on transport and distribution networks, and access to finance, investment and insurance that businesses rely on. The evidence suggests that impacts from these risks – such as increased damages from flooding and decreased employee productivity from high temperatures – will become more severe under most warming scenarios.

To remain successful, businesses must be able to assess climate risk and adapt.[10]

Actions to be Taken

The industry needs to use the roadmap as a basis for implementing the necessary changes as its part of the overall reduction in pollution and environmental impact.

We need to engage with government agencies and other industry, sharing knowledge and resources so it is achievable. Progress and change are going to be gradual, so the short and long term aims of the roadmap will reflect this.

Future Cost and Impact

There will be a financial cost in some areas just to meet compliance and regulation, however this should be regarded as an investment for the long term, without a sustainable, reliable marine environment our industry will not be viable.

We will need to review the ways in which we operate, from design and build to the type of facilities and how they are operated which will benefit us in the future as we will be able to offer our expertise, knowledge and products to a wider market.

Climate change – Environmental Impact

Unless we can successfully tackle the big environmental problems, we are likely to see rising sea levels as a consequence of global warming. An increase in in both atmospheric and water temperatures could affect the industry, we have already seen extreme weather in the UK, and the patterns and effects are currently unpredictable.

Resources & Technology to aid the fight against climate change

The following are examples of technologies, alternative resources and process and management changes that can support industry in meeting future objectives and targets. [LINK TO HUB]

- Ways to measure and monitor environmental improvements
- Design in marinas and harbours incorporating flood defences
- Planning for the future to account for significant likely change

Conclusion

The original Environmental Roadmap 2020 laid out a timeline and framework for the recreational marine industry giving our members the opportunity to assess their position from an environmental perspective and enable them to plan for the future. Since 2020 we have seen continued focus on environmental concerns, the government is steaming ahead with the long term strategy to return our natural state to pre 1990 levels and consumers are continuing to focus on the environmental credentials of businesses.

We are now starting to have a clearer idea of what it will take to achieve the objectives set, the sixth carbon budget has set us a challenge of a 78% reduction in CO emissions compared to 1990, electrification of the auto sector has hit the buffer of infrastructure and cost, and water companies are being held to account in public and parliament regarding their lack of investment to limit water pollution.

Making environmental change needs be an intrinsic part of a company's business model and risk register, but industry first having managed to keep itself afloat through the pandemic and now with the continuing cost of living and high interest rates crisis, is finding it difficult to give the environment the focus that it needs, and whilst we are seeing environmental strategy and planning start to take root in some of our larger companies, we need to increase the support to those smaller companies that don't have the same level of resource, to help them to start identifying what they need to do to meet these oncoming challenges.

The UK government is committed to not only reducing our environmental impact, but to develop, support and expand the maritime economy. There are resources, from R&D funding and grants, available to businesses as part of this, with guidance and advice on how to make use of the various funds available, from electrification of vessels propulsion to decarbonising industry processes.

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