

RENEWABLE MARINE ENERGY

POSITION PAPER





This position paper applies to Surfrider Foundation Europe's action Europe-wide and to those of its local branches. The position set out here may change subject to advances in scientific knowledge.

BACKGROUND

As part of the energy transition process and the European Union's aim to be carbon neutral by 2050 and to limit global warming to 1.5°C, Surfrider supports the growth of renewable energy (RE) in Europe. Renewable energy generates low carbon electricity and helps mitigate the effects of climate change. The presence of various renewable energy sources (wind, waves, tides, currents, etc.) on the coast and offshore makes these environments favourable to the necessary development of marine renewable energy (MRE) to meet the current and future energy needs of our societies. Surfrider supports, in principle, the growth of MRE as it features useful and vital complementarities compared to land-based RE.

This position paper includes:

- Offshore wind power (bottom fixed or floating)
- Wave power
- Current power (including tidal current power)
- Thermal energy and osmotic power

In its position on the energy transition ([to be discovered here](#)), Surfrider recalls the arguments which led it to support the development of renewable energies and the conditions of their development. These conditions are repeated and detailed here for the case of MRE:

- Any MRE project must replace a carbon-based energy source or convert some uses to electricity.
- Any MRE project must be part of a regional plan in consultation with users, based on the Aarhus Convention (see [Surfrider's recommendations](#)).
- Any MRE project must minimize its environmental impact through a rigorous ecosystem approach. The environment should be taken into consideration previously, in order to eliminate from the planning phase the development of MR in ecologically sensitive areas. The continuous advances in scientific knowledge will make it possible to avoid and reduce impacts and limit the use of compensation measures. Indeed, compensation measures are particularly difficult to implement for offshore ecosystems (1) .

Offshore wind turbines are today the most successful and efficient form of MRE technology. Their efficiency is linked to the strength and regularity of the wind at sea (2). The European Union subsequently aims to increase installed offshore wind power capacity from 12 GW now to 60 GW in 2030 and 300 GW by 2050 (3).

SURFRIDER'S POSITION



Surfrider supports the development of MRE despite detrimental short terms impacts. Indeed, they are crucial tools to actively contribute to the urgent need for energy transition that is essential to mitigate the effects of climate change, particularly on the ocean. Surfrider therefore supports, in principle, the European Union's goal to expand MRE projects, particularly offshore wind turbines.

Surfrider does however draw attention to several specific points to oversee MRE projects irrespective of the technology used, so that their development (construction, functioning, decommissioning) proceeds in the best possible conditions. Thus, the ocean should not be seen as a space to conquer and exploit unsustainably. The expansion of MRE must be achieved as part of an **energy sufficiency policy framework**.

1. BIODIVERSITY

Offshore renewable energy production impacts the marine environment throughout the life cycle of the projects. While an impact is inevitable, Surfrider insists that it must remain as minimal as possible. Thus, greater knowledge on biodiversity and marine ecosystems is needed to prevent and reduce the environmental impacts of an expansion in MRE, both in general terms and at local scale. Environmental studies cover MRE projects but also offshore and onshore connections. For Surfrider, only a global and ecosystemic approach will allow biodiversity to be taken into account in a fair manner.

The following aspects must be identified to provide an in-depth assessment of initial conditions:

- Species present and their degree of dependence on the local area;
- Essential habitats* for marine animals, sea birds and chiropterans, in order to be preserved and safeguarded;
- Marine habitats in order to be precisely mapped and assess their vulnerability.
- The functional diversity, to understand the level of dependence of various species in the area and ecosystems present.

**Essential habitats are those that are vital to a species completing its life cycle. These include migration corridors, reproduction areas, nurseries, feeding and resting areas.*

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Knowledge acquisition on the impact of MREs and their connection to biodiversity must be continued, particularly on:

- Direct and cumulative effects (between wind farms, and with existing uses) of their functioning;
- Impacts on the movements of sediments and currents and their effects on food chains;
- Electromagnetic field effects generated by grid connections, particularly on the development stage of the different species;
- The effects of noise on marine animals and sea birds;
- Chemical effects from the deterioration of materials.

The effects on ecological functions must be highlighted on for each project.



MRE projects should ideally stay outside marine protected areas (MPAs). Surfrider does however consider that MRE can be developed in MPAs provided their protected status and their management document allows for this and if a better solution is unavailable. More specifically, any MRE project in MPAs under high or full protection (IUCN categories I to III, or future strongly protected areas) (4) must remain strictly impossible. If a MRE project is planned in a MPA, closer attention must be given to the points above as MPAs are designated because of key ecological advantages. For Surfrider, the compatibility between an MPA and an MRE project should be questioned upstream of the project proposal and be explicitly mentioned in the MPA management document.

2. USES

- Surfrider advocates dialogue with users and civil society to be started at the earliest possible stage prior to the project and to be continued throughout its whole implementation. All economic stakeholders, NGOs and local leisure users have to be included. A proper dialog allowing citizen engagement should be conducted rather than providing mere information or a single meeting. Surfrider considers this is the only way to account for all factors and to produce a genuine and consistent development plan for the whole area.
- Surfrider considers that the effect of MRE projects on uses must be further explored both from physical (altered currents and wave patterns and as such, activities), socio-economic (effects on fishing or the disappearance of other activities), heritage standpoints (impact on iconic waves or damage to unspoilt or listed sites), ([see Surfrider article](#)).
- Surfrider highlights the importance to carefully assess the effects of offshore and onshore connections on uses and on erosion.
- Surfrider stresses the necessity to plan MRE projects in maritime spatial planning documents to avoid overly exploiting the marine environment. To leave room for this new use, the environmental strategic impact assessment of this documents must be done in order to arbitrate between the different uses. For Surfrider, other industrial marine uses should be halted, such as offshore drilling, or improved to reduce their impact, like marine shipping (see the [Green Marine Europe](#) programme).

3. TECHNOLOGIES

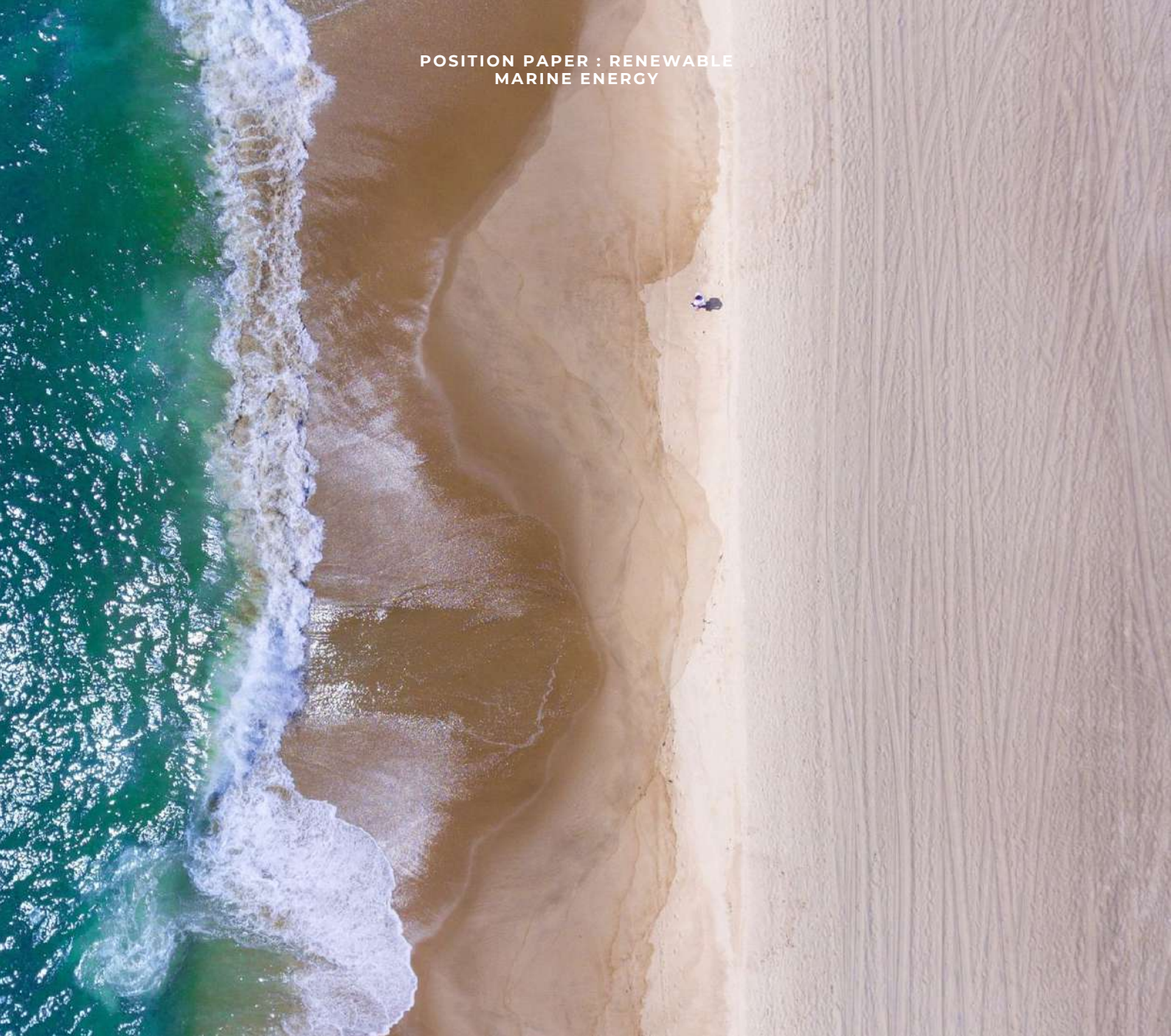
- Surfrider encourages the installation of tried and tested technologies, whose impacts on biodiversity can be understood through feedback from pilot farms or similar development, to keep them at an absolute minimum.
- As concerns fledgling technology, Surfrider supports small-scale trials, which, in addition to technological tests, will make it possible to study the impacts on biodiversity and the environment. This knowledge will also make it possible to model the cumulative impacts of larger MRE farms.
- Life cycle is a key subject. Efforts must be continued on the recycling potential of all systems (5) , including turbine blades that are currently mostly non-recyclable due to the material used. What happens to them once decommissioned is a current challenge.
- The decommissioning stage requires further investigation. In terms of undersea structures being colonised by marine organisms or the occurrence of a 'reserve effect' (when removal programmes cease), maintaining these installations may be encouraged. When possible, the reuse of foundations for a new operating cycle of 20 to 30 years should be considered and anticipated.



CONCLUSION

In conclusion, the growth of MRE is to be supported to mitigate the effects of climate change and diversify the sources of low-carbon electricity production. However, this growth must not be at the expense of biodiversity and natural and cultural heritage. If collateral damage is unavoidable, it must be kept to an absolute minimum:

- Only a comprehensive marine spatial planning approach that counts biodiversity among its key criteria and which conducts strategic environmental impact assessment of the maritime planning documents on all maritime activities can allow for the growth of MRE in the right conditions.
- These maritime planning documents must be consistent with each other, at national, European and international scales, as well as with marine protection strategies and energy plans
- At last, dialogue with civil society is essential, with transparent information available on the knowledge of environmental impacts, socio-economic consequences and State strategies for energy, environmental protection and maritime spatial planning. Each project will have its own specificities with regard to local issues and must therefore also be the subject of a project-by-project analysis, in close dialogue with civil society.



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