

MRE Regulator Survey: *FRANCE*



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Table of Contents

Introduction	3
Participants	3
Familiarity with MRE Technologies.....	5
Top Challenges and Perceptions.....	7
Data Transferability.....	11
Best Approach to MRE Development	13
Use of <i>Tethys</i>	15
Awareness.....	15
Purpose	15
Usefulness.....	16
Conclusion.....	17

Introduction

As marine renewable energy (MRE) is still a new industry, there are many unknowns about the potential environmental effects of MRE deployments. These concerns are largely based in the uncertainty of how wave and tidal devices interact with the environment, or how marine animals behave around devices. This uncertainty makes permitting processes for MRE projects difficult, often requiring extensive monitoring and data collection. This cautious approach may limit the implementation of MRE technologies or create financial barriers to development.

To better understand the viewpoint of regulators involved in permitting MRE devices, a survey was conducted among multiple OES Environmental countries. The survey was intended to understand the familiarity of regulators with MRE technologies, their perceptions of environmental risk, and their recommendations on best approaches to MRE development, including permitting and the potential for data transferability. The survey also included some questions to gather *Tethys* user data. This report summarizes the results from the survey of regulators in France.

Participants

Email invitations to complete the 2019 Survey on Regulatory Needs for the Environmental Effects of Permitting Marine Energy in France were sent to selected individuals known to be involved in permitting MRE. Questions and response selections were provided in both English and French. Out of 21 total responses received, only 12 responses were retained for analysis due to a significant portion of incomplete data in 9 of the responses. Participation declined throughout the survey, with 10 participants completing the survey in entirety.

Figure 1 shows the distribution of participants by the jurisdictions they represent (n = 12). ‘Other’ responses included: “*Bureau d'études en environnement marin*” (“Technical office in marine environment”) and “*Sous région Marine. Peut être considérée à l'échelon Régional*” (“sub-region, can be considered as regional”).

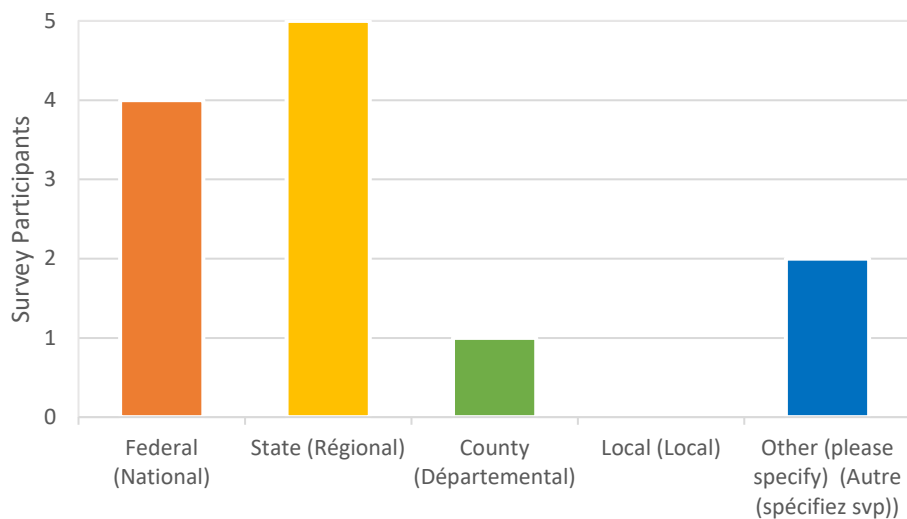


Figure 1. Jurisdiction of survey participants. (n =12)

7 out of 12 respondents indicated that they have participated in the permitting of an MRE device. Participants were asked to identify the focus of their agency in permitting MRE developments and their individual role in permitting MRE developments. These results are summarized in Figure 2 and Figure 3, respectively. The most common focus was environmental protection/management, with 7 out of 12 respondents selecting it as a focus. Fish were the second most common focus, with 4 responses. Comments for those who chose 'Other' included "none", "N'oublions pas les oiseaux, pour les éoliennes ça serait dommage !" ("do not forget birds for wind farms, that would be sad!") and "Raccordement électrique" ("Electrical connection").

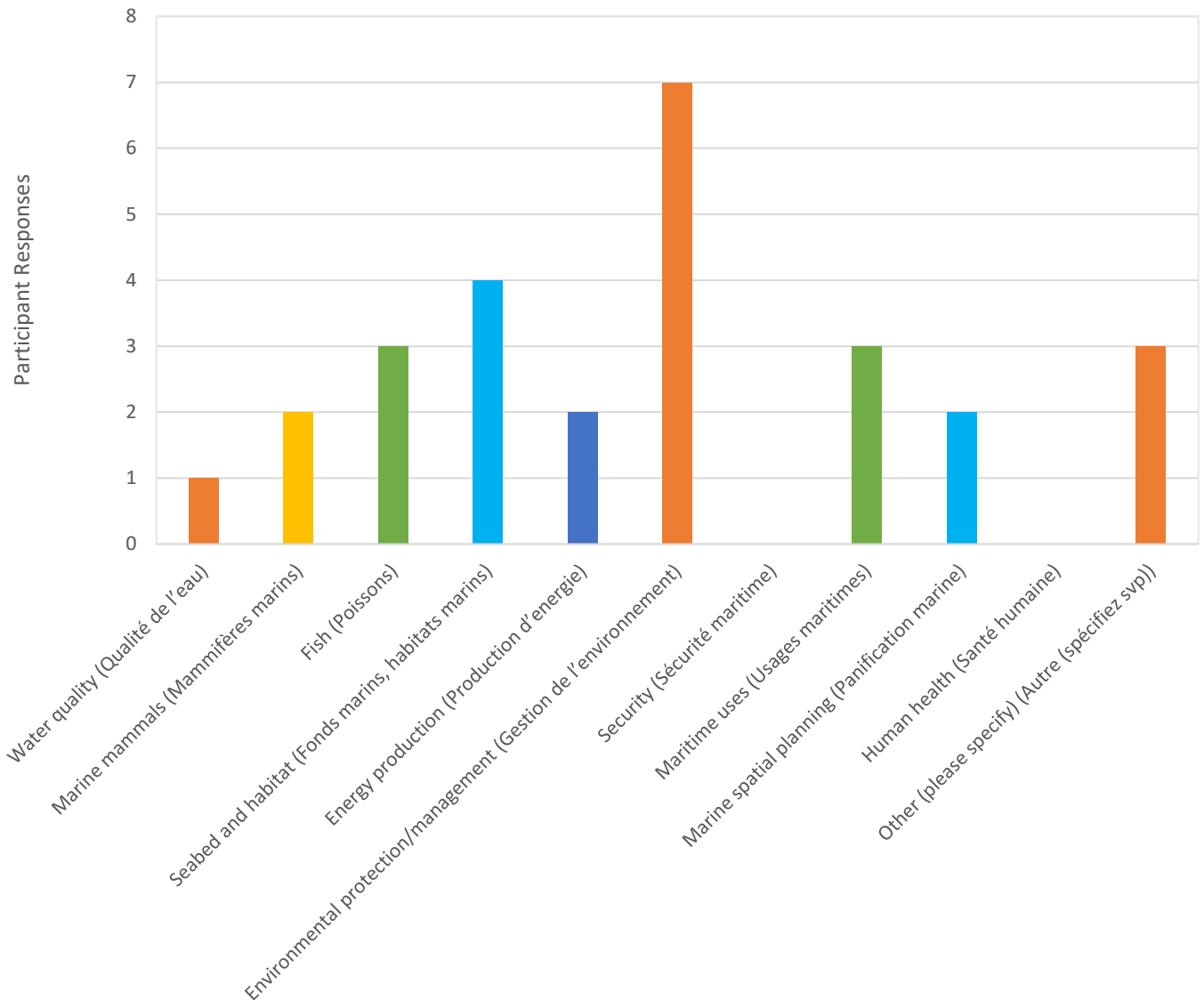


Figure 2. Agency focus in permitting MRE developments. (n =12)

When asked to select all that apply from the options listed in Figure 3, the most common individual roles for survey participants were involvement in delivering an option (n = 6), advising regulators (n = 6), reviewing applications (n = 5), and advising policy decisions (n = 5). ‘Other’ individual roles included “*Rédiger des arrêtés de déclaration d'utilité publique pour les raccordements électriques, si nécessaire*” (“Write executive order for electrical connection, if necessary”).

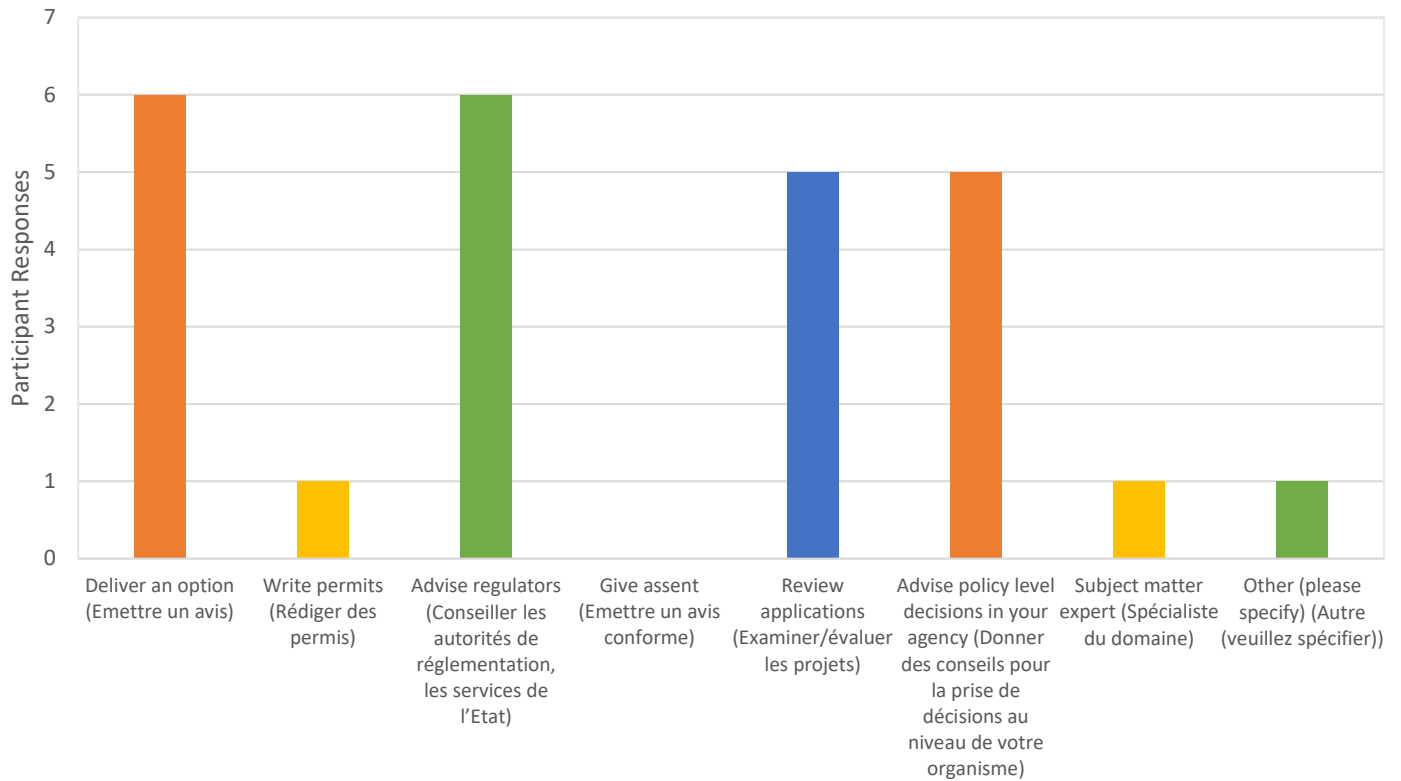


Figure 3. Individual role in permitting MRE developments. (n =12)

Familiarity with MRE Technologies

Regulators were asked to rate their familiarity with tidal energy technologies on a scale of 1 (not familiar) to 5 (very familiar). They were provided with explanations of all of the terms presented from <http://www.emec.org.uk/marine-energy/tidal-devices/>. The results are presented in Figure 4. Most regulators are not very familiar with tidal technologies, although there are a few who consider themselves between somewhat and very familiar with each type (Figure 4).

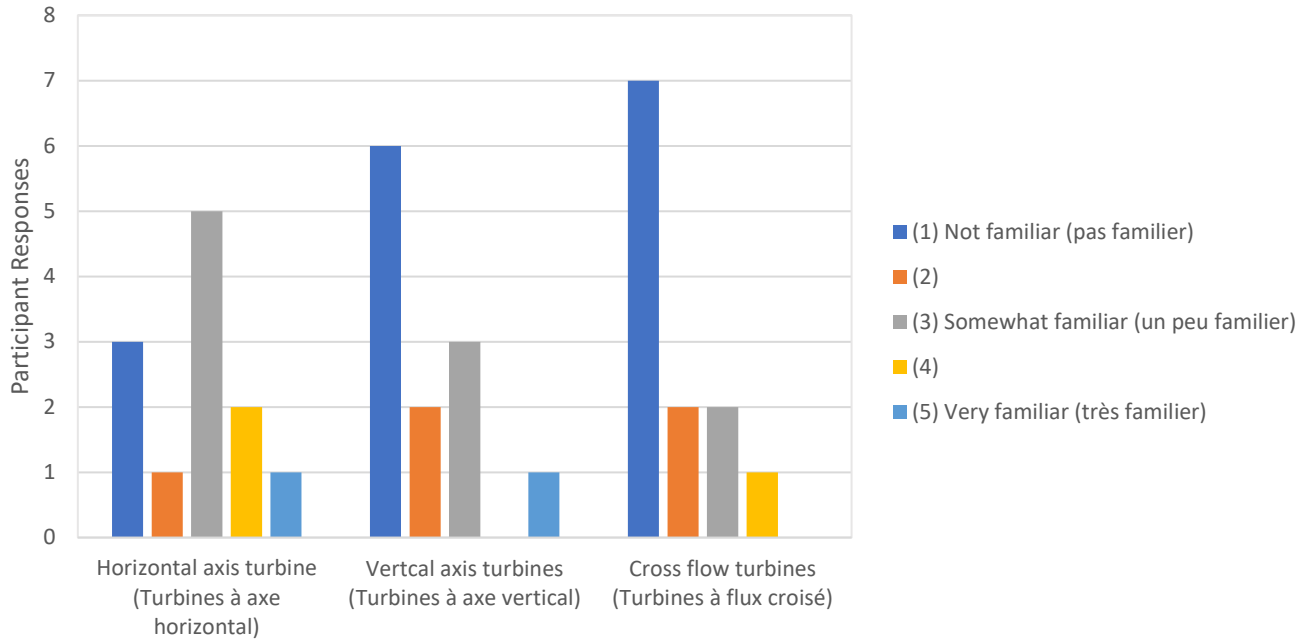


Figure 4. Familiarity with tidal energy technologies. (n = 12)

Regulators were also asked to rate their familiarity with wave energy technologies on a scale of 1 (not familiar) to 5 (very familiar). They were provided with explanations of all of the terms presented from <http://www.emec.org.uk/marine-energy/wave-devices/>. The results are presented in Figure 5. Most regulators were not familiar with any of the types of wave energy devices.

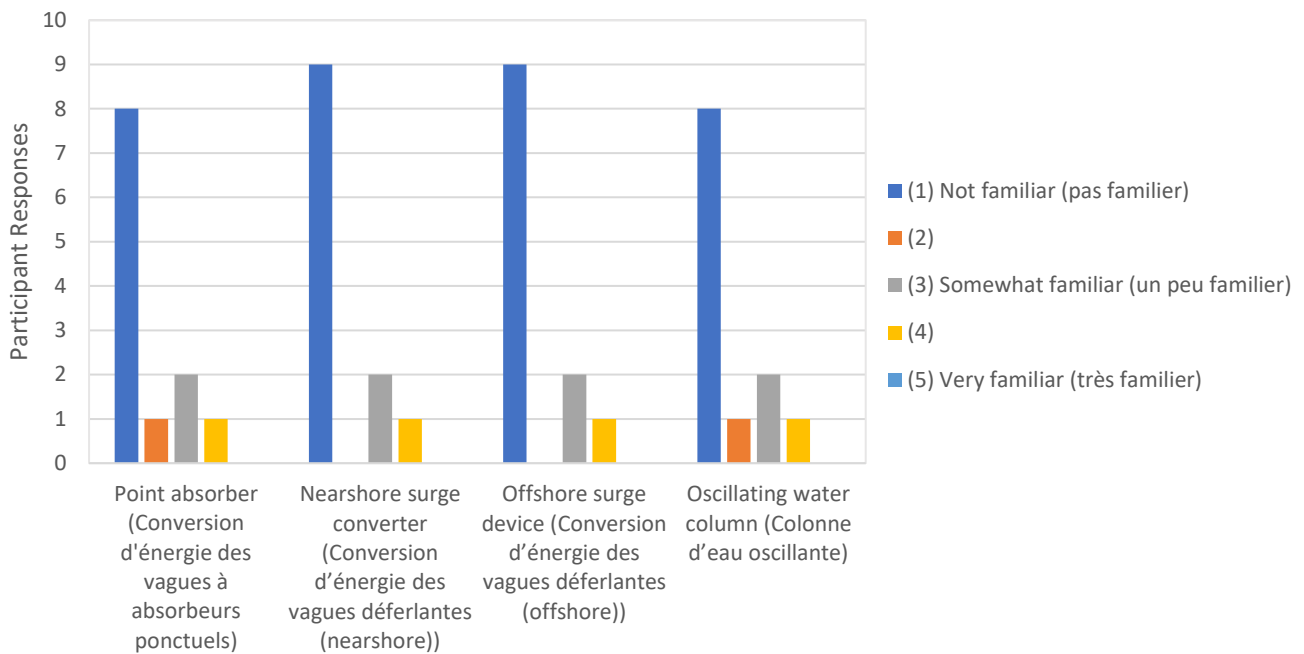


Figure 5. Familiarity with wave energy technologies. (n = 12)

Regulators were also asked to rate their familiarity with offshore wind turbine technologies and devices on a scale of 1 (not familiar) to 5 (very familiar). They were provided with explanations of all of the terms presented from <http://www.emec.org.uk/marine-energy/wave-devices/>. The results are presented in Figure 6. All regulators were somewhat familiar with both types of offshore wind technologies, with many regulators indicating that they were very familiar.

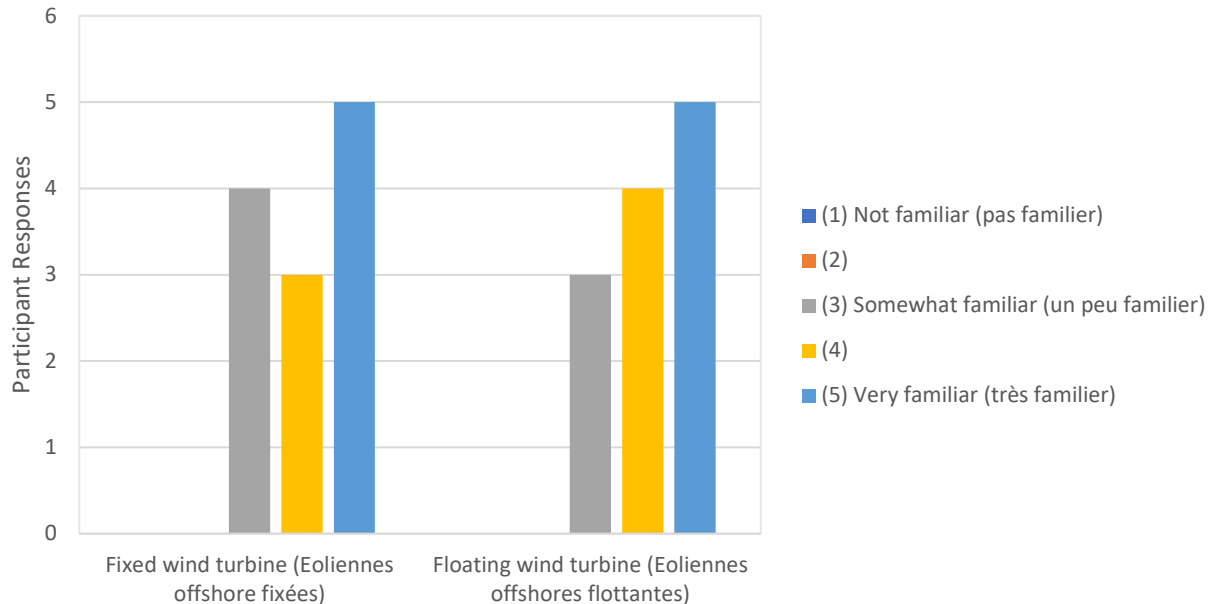


Figure 6. Familiarity with offshore wind technologies. (n = 12)

Top Challenges and Perceptions

Regulators were asked to rank the following challenges from 1 (most important) to 13 (least important) for permitting projects with single marine energy devices and for arrays.

- Chemical releases and water quality degradation (*Rejets de composés chimiques et dégradation de la qualité de l'eau*)
- Electromagnetic field (EMF) effect on animals (*Effet des champs électromagnétiques sur les organismes marins*)
- Benthic/habitat disturbance (*Perturbation des habitats, des communautés benthiques*)
- Landscape or living environment disturbance (*Perturbation des paysages, du cadre de vie (aériens/sous-marins)*)
- Risk of animals colliding with underwater devices (*Risque de collision entre organismes marins et structures EMR*)
- Effects of underwater sound emissions from devices on animals (*Effets des émissions sonores liées au fonctionnement des structures EMR sur les organismes marins*)
- Avoidance, attraction, and/or displacement of animals (*Evitement, attraction et/ou déplacement d'organismes marins*)
- Energy removal and effects of changes in flow on the ecosystem (*Réduction de l'énergie ambiante (flux) et impact sur les écosystèmes*)

- Entanglement of animals with lines and cables (*Emmêlement des animaux dans les lignes d'ancrage et les câbles*)
- Effects of development on cultural heritage (*Effets du développement des EMR sur l'héritage culturel*)
- Using space of existing maritime uses (*Utilisation de l'espace occupé par des activités existantes*)
- Concertation with stakeholders throughout permitting and development (*Concertation avec les acteurs locaux tout au long du processus de développement et d'autorisation des projets EMR*)
- Length of the administrative permitting process (*Longueur du processus d'autorisation des projets EMR*)

The average ranking of each challenge was calculated by Survey Monkey, such that the answer choice with the largest average ranking is the top challenge.¹

The results of this ranking for **single devices** are shown in Figure 7 (n = 10). Top ranked challenges include risk of collision, effects of underwater sound, and benthic/habitat disturbance. Of note, several human-related challenges ranked higher than some environmental concerns, especially length of the permitting process and concertation with stakeholders.

¹ Method used to calculate average rank uses the equation below, where w is the weight of the ranked position and x is the response count for each answer choice.

$$\frac{x_1w_1 + x_2w_2 + x_3w_3 \dots x_nw_n}{Total\ Response\ Count\ (n)}$$

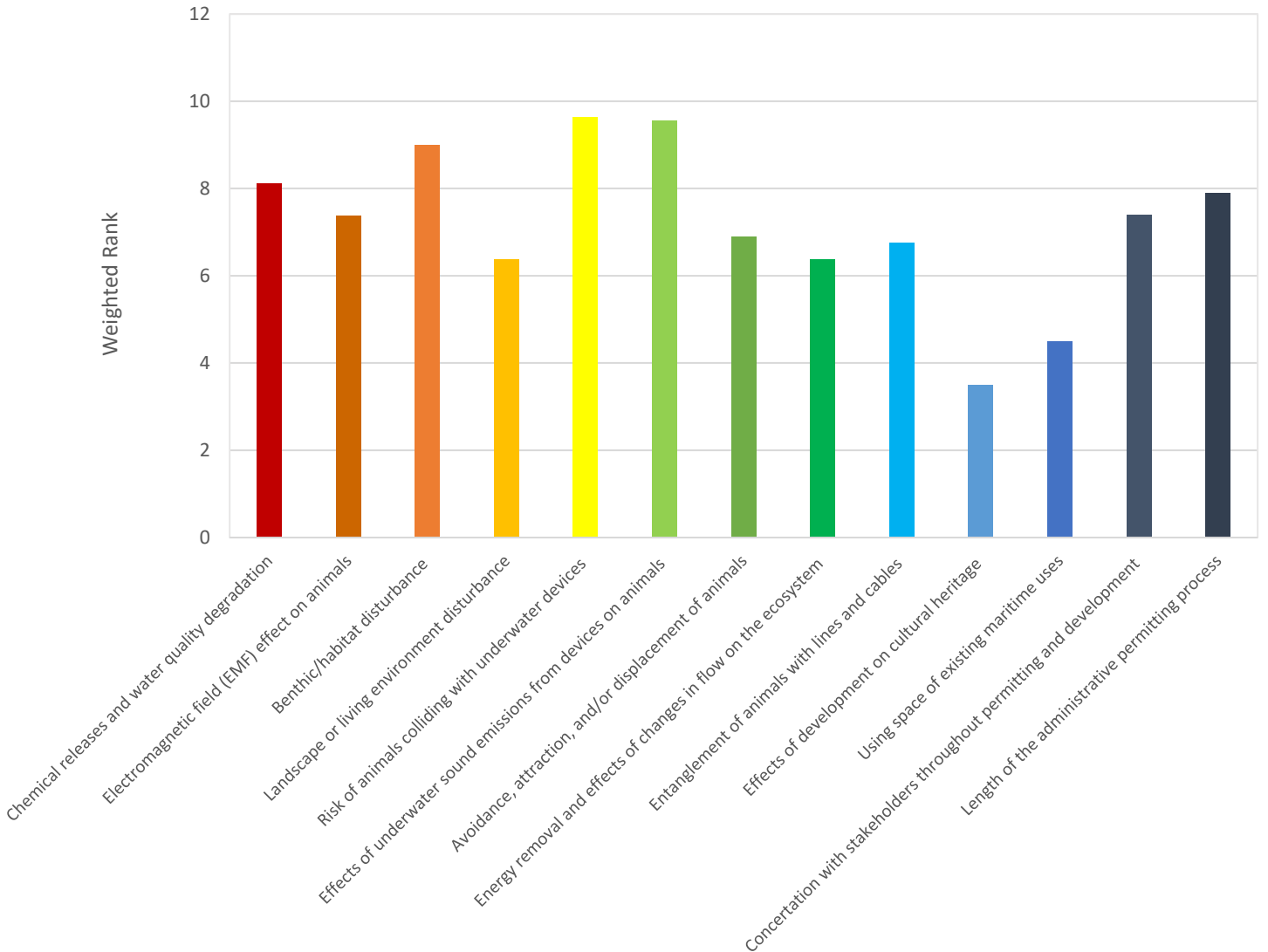


Figure 7. Ranking of challenges to permitting *single devices*. (n = 10)

The results of this ranking for **device arrays** are shown in Figure 8 (n = 10). Top ranked challenges include risk on collision, effects of underwater sound, and chemical releases. Human-related concerns remain highly ranked for arrays, as with single devices, while the distribution of environmental concern shift with the change in scale.

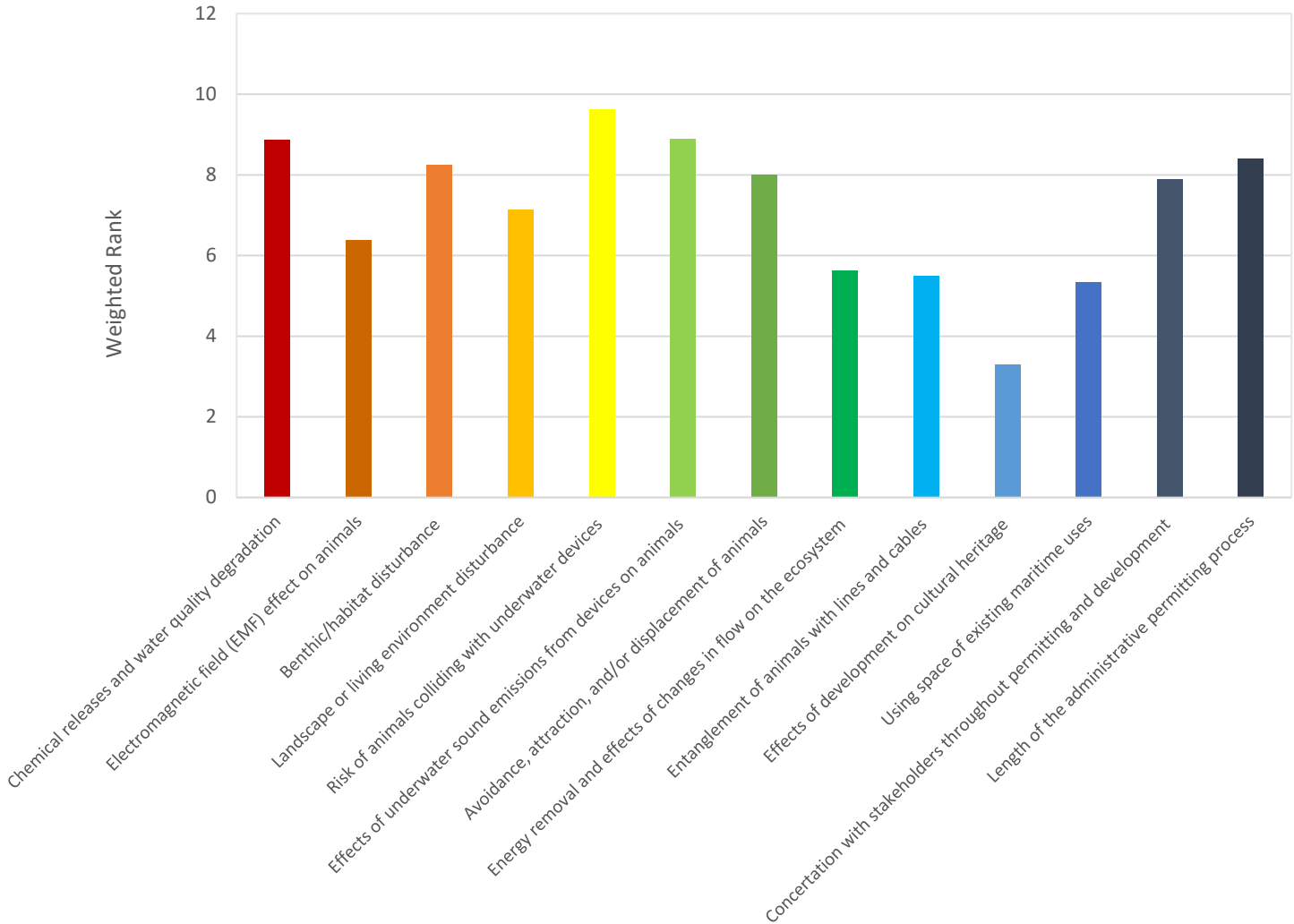


Figure 9. Ranking of challenges to permitting *device arrays*. (n = 10)

Regulators were asked to respond to several statements about permitting for **single devices** with respect to their top ranked challenge.

1. Sufficient field data are needed to determine risks and reduce uncertainty of MRE development (*Les données/études qui sont actuellement requises pour déterminer les risques et réduire les incertitudes concernant les effets des EMR sur l'environnement sont suffisantes*)
2. Numerical models play an important role in environmental permitting (*Les modèles numériques jouent un rôle important en matière d'autorisation environnementale*)
3. Agency /policy guidance are needed to interpret risk and uncertainty (*Des directives sont nécessaires pour interpréter les risques et incertitudes*)
4. Staff need to be knowledgeable and trained on technologies, interactions, the various involved stakeholders, etc. (*Le personnel doit posséder de solides connaissances et être formé sur les différentes technologies, les divers acteurs impliqués et leurs interactions, etc.*)

The results of this question are summarized in the heat map below (Table 1). Multiple regulators disagree that sufficient field data are needed to reduce uncertainty. The majority of regulators agree or strongly agree with the rest of the statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Sufficient field data	2	4	1	3	0
2. Numerical models	0	1	1	7	1
3. Agency/policy guidance	0	0	1	5	4
4. Staff knowledge and training	0	0	0	2	8

Table 1. Regulator perceptions of *single device* statements. (n = 10)

Regulators were also asked to respond to the same statements as previously about permitting for an **array** of devices with respect to their top ranked challenge.

The results of this question are summarized in the heat map below (Table 2). Moving from single devices to arrays, there is increased support for the role of numerical models and agency/policy guidance, with the rest of the responses remaining relatively stable (n = 12).

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Sufficient field data	3	4	0	3	0
2. Numerical models	0	0	1	6	3
3. Agency/policy guidance	0	1	1	3	5
4. Staff knowledge and training	0	0	0	2	8

Table 2. Regulator perceptions of *device array* statements. (n = 10)

Data Transferability

Regulators were asked to respond to the question: “Can data be collected from other locations be applied towards permitting and licensing marine energy projects within your jurisdiction? Please answer based on your top priority. (*En vous basant sur les défis prioritaires que vous avez classés en réponse, pensez-vous que des données collectées à d’autres sites puissent être appliquées/utilisées dans le but d’obtenir des permis environnementaux dans votre juridiction?*)” Participants were given the option of ‘Never (*Jamais*)’, ‘Maybe (*Peut-être*)’, and ‘Absolutely (*Absolument*)’. Responses to this question are shown in Figure 9. The majority of respondents (8 out of 10) selected ‘Maybe (*Peut-être*)’.

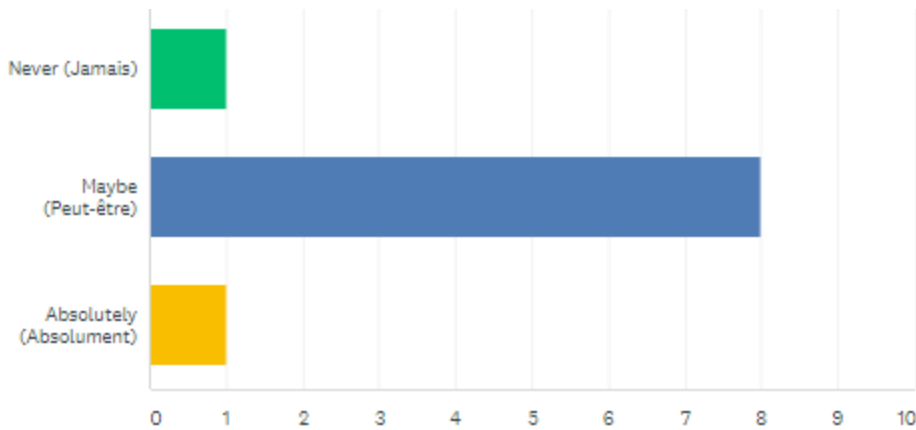


Figure 10. Can data be collected from other locations be applied towards permitting and licensing marine energy projects within your jurisdiction?. (n = 10)

Additional comments left in response to this question include:

- *“La prise en compte des perturbations causées par l'implantation de structures EMR sur les activités et usages "historiques" dépend de l'importance de la perte de territoires. De même, ces structures, surtout en surface, représentent de nouveaux dangers pour la sécurité de la navigation. Ne pas en tenir compte est irresponsable. Pour plus d'explication, rendez-vous au prochain évènement de mer où un navire en avarie ira jouer aux quilles dans un site industriel EMR...”*

(“Considering effects caused by the establishment of MRE devices on activities and historical uses depends on the importance of territory loss. Similarly, those devices, mainly in surface, represent new dangers for shipping security. Not taking this in account is irresponsible. For more explanation, see the next event when a damaged boat will collide against an MRE site”)

- *“Les données environnementales sur d'autres sites sont importantes à prendre en compte en terme de rex, de partage d'études et de protocoles, pour répondre à l'analyse des effets cumulés ; mais ces résultats /données ne sont pas toujours transposables au site en question (spécificité du milieu et des espèces présentes, du contexte locale et des facteurs environnementaux...) donc des mesures in situ restent nécessaires.”*

(“Environmental data from other locations are important to consider for studies and protocols sharing and to analyze cumulative effects. But these results/data are not always transferable in one given location (specific habitat and species, local context, environmental factors...) and in situ measurements remain necessary.”)

- *“Le changement rapide de la dimension des machines (modification des hauteurs de pales, puissances etc.) nécessite une mise à jour des sensibilités des différentes espèces. Les données existantes en France ou en Europe sont donc un peu toutes dépassées (à mon stade actuel de connaissance). L'effet de déplacement lié à l'installation d'un parc nécessite une étude de la population locale qui subit l'impact. On ne peut pas (par exemple) estimer l'impact sur une population de 60 grands dauphins sédentaires en se basant sur des domaines vitaux de populations nomades de mer du Nord.”*

(“The rapid change of device sizes (turbine blades height, power... etc) leads to the need for updating species sensitivities. Existing data in France or Europe are a little outdated (to the best of my knowledge). Displacement effect linked to MRE installation requires a study on the local population that is impacted. For example, we cannot estimate the impact on a resident population of 60 dolphins by using information on migrating population of the North Sea.”)

- *“Toute donnée récoltée et mise en commun permet de faire avancer la connaissance de zone et des impacts d'une structure EMR sur le milieu. Donc cela peut contribuer, mais l'étude d'impact au niveau d'un site reste la règle de base.”*

(“Every data collected and shared allows advancing the knowledge of a location and the impacts of an MRE device in the habitat. This can contribute but studying the impact at the scale of one specific site remains the first rule.”)

- *“Tout dépend si ces données sont transposables ou non : cela dépend donc des données collectées, de l'environnement du projet pour lequel les données ont été collectées et des modalités de collecte des données. Une telle utilisation pourrait éventuellement être envisagée si la transposition des données collectées est rigoureusement démontrée.”*

(“It depends if the data are transferable or not: therefore it depends on the collected data, the environment of the project in which the data were collected, and how the data were collected. The use of data from another site could be considered if the transferability of the collected data is rigorously demonstrated.”)

- *“les retours d'expériences sur d'autres sites peuvent apporter des réponses mais il faut remettre les machines dans leur contexte environnemental pour en comprendre les interactions.”*

(“Feedbacks from studies on other sites can bring answers but MRE devices need to be considered in their environmental context to understand the interactions.”)

- *“Dans la mesure où on est capable de réaliser l'extrapolation sur la base de données spécifiques”*

(“If we are able to extrapolate from specific data.”)

Best Approach to MRE Development

Regulators were asked, “Which of the following approaches best describes your vision of how the MRE industry should develop? (Choose one). (Parmi les approches présentées ci-dessous, laquelle décrit le mieux votre vision de la manière dont l'industrie des EMR devrait se développer? (Veuillez en choisir une seule))”. The options, as provided to regulators in the survey, are as listed below:

- *Precautionary Principle:* There is a high degree of uncertainty and potentially negative outcomes associated with MRE deployment and operation. Measures should be taken to avoid the negative outcome by proceeding very cautiously or not pursuing projects at all. (Principe de précaution. Le degré d'incertitude est trop élevé et les conséquences

négatives associées aux déploiement et fonctionnement des EMR sont potentiellement trop nombreuses. Des mesures visant à éviter les impacts négatifs doivent être menées précautionneusement ou l'abandon des projets doit être envisagé).

- *Mitigation Hierarchy*: Impacts or risks should be systematically limited by taking actions to avoid, minimize, mitigate and/or compensate for risks through siting and/or mitigation measures. (Hiérarchisation des méthodes d'atténuation. Les impacts ou risques d'impacts doivent être systématiquement limités en mettant en place des actions visant à éviter, minimiser, réduire et/ou compenser ces risques.)
- *Phased Approach*: Single devices should be deployed first, followed by slowly ramping up to array scale after potential risks are better understood and managed. (Approche par étapes. Les dispositifs EMR individuels devraient être déployés dans un premier temps, suivis par une augmentation progressive du nombre de structures jusqu'à l'échelle « ferme commerciale » quand les risques et impacts potentiels induits par l'installation des EMR sont mieux compris.)
- *Adaptive Management*: A learning-based management approach should be applied that includes adapting monitoring and mitigation over time to understand risks, decrease uncertainty, and mitigate for impacts. (Gestion adaptative. Une méthode de gestion basée sur l'apprentissage au cours du développement des EMR et intégrant donc des adaptations en terme de suivi et de réduction des risques devrait être appliquée.)
- *Survey, Deploy, Monitor*: The area of a proposed project should be surveyed before deployment, coupled with monitoring around the device before deployment can proceed. (Caractériser, déployer, suivre. La zone pressentie pour le déploiement d'un projet doit être étudiée avant le déploiement, et un suivi autour des dispositifs EMR après déploiement doit être assuré.)
- *Just do it*: Risks to the marine environment are almost certainly low, so development should be able to move forward. (Faisons-le. Les risques environnementaux sont sans doute très faibles; aussi, le développement doit aller de l'avant.)

Results from this question are described in Figure 10. Preferred management approaches varied widely.

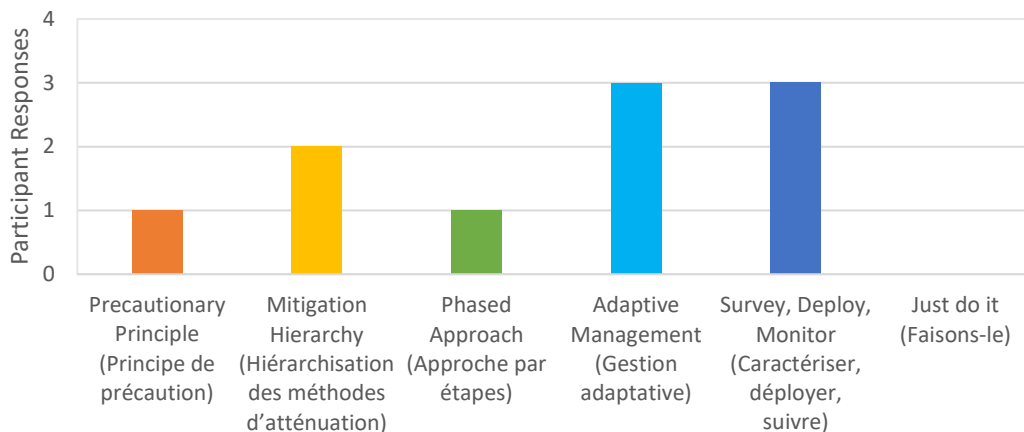


Figure 10. Regulator perspectives on management approaches. (n = 10)

Use of *Tethys*

In addition to questions about permitting of MRE devices, regulators were asked about their awareness and use of the *Tethys* database. The results are summarized below in Figures 11, 12, and 13.

Awareness

Most participants (7 out of 10) were not aware of *Tethys*. 2 of the participants have been using it for more than a year. (Figure 11)

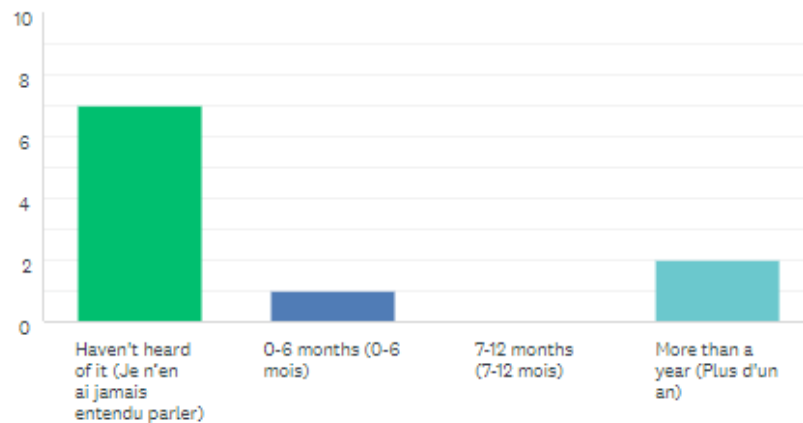


Figure 11. How long have you been aware of *Tethys*? (n = 10)

Purpose

Respondents who have been aware of *Tethys* (n = 3) were asked to indicate how they use *Tethys* by indicating all uses that apply from the following list:

- To find papers and reports on MRE environmental issues (Pour trouver des papiers et rapports sur les problématiques environnementales dans un contexte EMR)
- To learn more about environmental effects of the MRE industry (Pour en apprendre davantage sur les impacts environnementaux de l'industrie EMR)
- To participate in webinars and expert forums (Pour participer à des webinars et des forums d'experts)
- To review archived webinars and expert forums (Pour consulter des webinars archivés et réponses sur le forums d'experts)
- To receive the *Tethys Blast* newsletter (Pour recevoir la newsletter *Tethys Blast*)
- To search the *Tethys* event calendar (Pour rechercher un évènement dans le calendrier *Tethys*)

The responses are summarized below in Figure 12. All participants who responded use *Tethys* to find papers and reports on MRE environmental issues. None of the participants use *Tethys* to participate in webinars, receive the *Tethys Blast*, or search the event calendar.

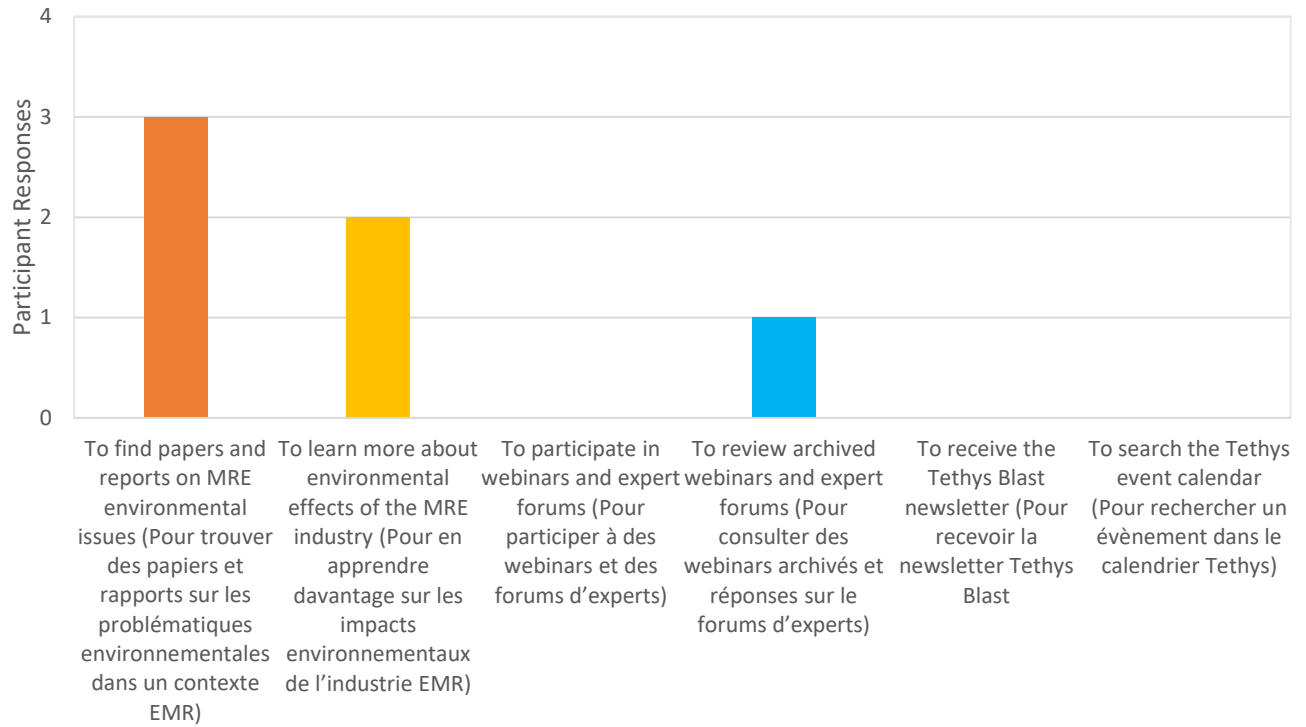


Figure 12. How do you use Tethys? (n = 3)

Usefulness

Each of the participants who responded view Tethys as useful, though each individual responded with a different level of usefulness (n = 3, Figure 13).

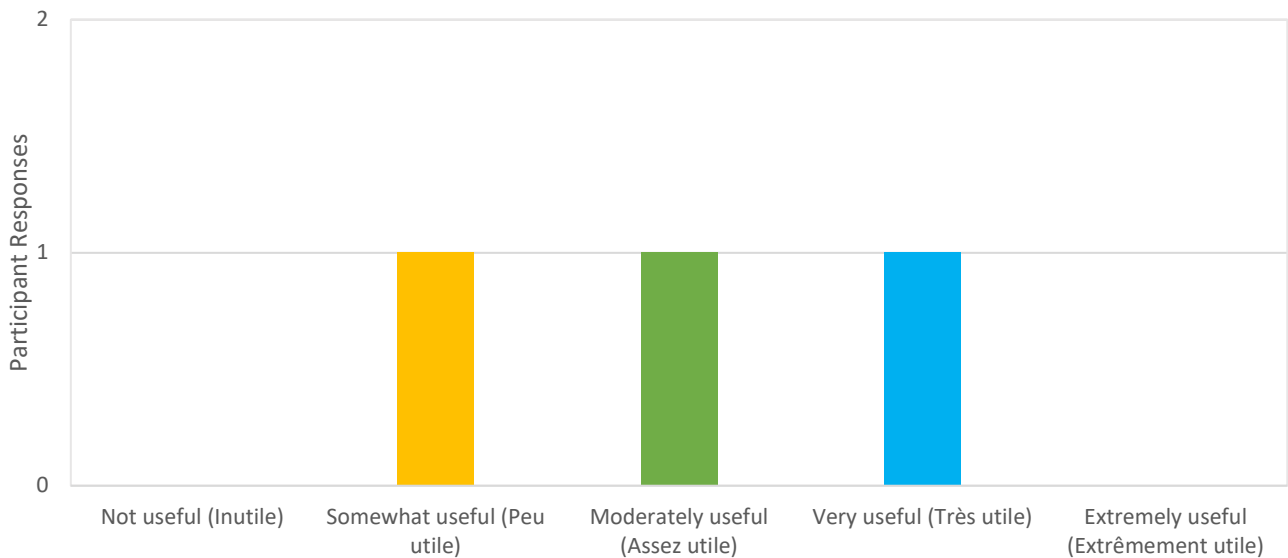


Figure 13. How useful is Tethys for providing information on the environmental effects of marine energy projects? (n = 3)

Conclusion

The France regulators that participated in this survey have experience permitting MRE devices and advising policy decisions, though they are more familiar with wind energy technologies. Out of MRE technologies, they are most familiar with horizontal axis tidal devices, and less familiar with other tidal or wave device types. The agencies they represent focus on environmental protection and management, split fairly evenly between state and federal agencies. Their main concerns in permitting MRE developments, for both single devices and arrays, are centered around risk of collision with devices and the effects of underwater noise.

Overall, regulators are open to the possibility of transferring data to permit projects, though one regulator stated that data transferability was never a possibility. The comments left in response to suggested data transferability indicate that greater understanding of the data transferability process OES-Environmental has developed would increase the potential for its application in French waters. Preferred approaches to development of the MRE industry vary greatly among regulators, though the leading approaches are adaptive management and survey, deploy, and monitor.

Regarding *Tethys* use, most regulators are unfamiliar with *Tethys*, and those who have used it only use it in limited ways. Going forward, the use of *Tethys* as a platform for additional engagement, including data transferability and risk retirement, will require increased promotion of *Tethys* and demonstration of its features and capabilities in order to reach regulators in France.