

PROPOSITION DE SUJET DE THESE

Formulaire demande de financement : ARED - ISblue - ETABLISSEMENTS - ...

*pour dépôt sur le serveur <https://theses.u-bretagne.fr/sml> au format PDF**NB : ce dossier ne vous dispense pas de déposer en parallèle votre dossier à la Région***Identification du projet**Acronyme du projet (8 caractères *maximum*) : MIXERMIntitulé du projet *en langue française* : « L'intégration des énergies renouvelables en mer dans le mix énergétique français : contribution au droit de l'énergie »Intitulé du projet *en langue anglaise* : « The integration of offshore renewable energy in the French energy mix: a contribution to energy law »**Présentation de l'établissement porteur (bénéficiaire de l'aide régionale)**

Établissement porteur du projet : UBO

Ecole Doctorale : EDSML SPI ou MATHSTIC pour les projets ISblue **Identification du responsable du projet (futur directeur de thèse)**

Nom du laboratoire d'accueil : UMR AMURE

Code du laboratoire (U/UMR/USR/EA/JE/...) : UMR 6308

Directeur¹ du Laboratoire : Gaëlle Guéguen-Hallouët

Nom de l'équipe de recherche :

Nombre HDR dans le laboratoire : 16 Nombre de thèses en cours : 14 Nombre de post-docs en cours : 3

Nom et prénom du directeur* de thèse (HDR), porteur du projet : Boillet Nicolas- e-mail : nicolas.boillet@univ-brest.fr

- Téléphone : 0615403447

- **Publications récentes du directeur de thèse** (*nb total et 5 références max au cours des 5 dernières années*) :
= 15 papers in peer-reviewed journals; 8 book chapters.- « Le droit de l'exploitation de l'énergie et de l'eau », titre 76, in P. Chaumette (dir.) *Droits maritimes*, coll. Dalloz Action, Dalloz, 2021, p. 1696-1715.

- « La nouvelle politique maritime de la France », La Documentation Française, Cahiers Français, n° 419, janv.-fév. 2021, p. 5-13.

- « Le rôle de la planification de l'espace maritime dans la prise en compte de la biodiversité par le transport maritime. La PEM, instrument de conciliation », in N. Boillet, B. Queffelec, *Le transport maritime et la protection de la biodiversité*, Pedone, Paris, 2021, p. 51-79.

- Offshore Renewable Energy Planning in French Law: towards an integrated process? : N Boillet 2020 J. Phys.: Conf. Ser. 1452 012045.

¹ Ce formulaire est rédigé en style épïcène

- « Quelles avancées pour la planification des énergies marines renouvelables en mer ? », Energie, Environnement, Infrastructures, LexisNexis, n° 2, février 2019, p. 20-26.

- Expériences d'encadrement et co-encadrement de doctorants (passées et en cours)

(nom des doctorants dirigés et en cours et antérieurement, sur les 6 années passées : sujet, financement, date de soutenance, et situation professionnelle actuelle si connue)

Membre d'un comité de thèse : - Depuis 2017, Angeline Gonzalès, « Étude comparée des droits chiliens et français applicables aux EMR » sous la direction de G. Guéguen-Hallouët et Pr. Pilar Moraga (université du Chili).

- 2017-2019 Philippe Fotso, « Les conditions juridiques de la planification spatiale marine » sous la direction de M. Bonin (IRD). Thèse soutenue en décembre 2019.

Co-directeur de thèse (HDR ou équivalent étranger) éventuel :

Laboratoire de recherche : (nom + code U/UMR/USR/EA/JE/...)

- e-mail :

- Téléphone :

- Expériences d'encadrement et co-encadrement de doctorants (passées et en cours)

(nom des doctorants dirigés et en cours et antérieurement, sur les 6 années passées : sujet, financement, date de soutenance, et situation professionnelle actuelle si connue)

Et/ou co-encadrant-e scientifique :

Louis de Fontenelle, maître de conférences en droit public

Laboratoire de recherche co-encadrant (nom + code U/UMR/USR/EA/JE/...) TREE UMR (Transitions énergétiques et environnementales) 6031

- e-mail : louis.defontenelle@gmail.com

- Téléphone : 33 6 27 58 17 81

- Expériences d'encadrement et co-encadrement de doctorants (passées et en cours)

(nom des doctorants dirigés et en cours et antérieurement, sur les 6 années passées : sujet, financement, date de soutenance, et situation professionnelle actuelle si connue)

Marie AUGER - thèse E2S PIA Géfiss, "Le droit du sous-sol et la transition énergétique" - 10/2019 (Jean GOURDOU - Louis DE FONTENELLE)

Elisabeth LAPORTE, thèse E2S, "Accompagnement juridique de la transition énergétique gazière" - 04/2018 (Jean GOURDOU - Louis DE FONTENELLE)

Charly VALLET - thèse E2S CDAPP, Les transitions énergétiques et environnementales à l'épreuve de la crise sanitaire et économique liée au COVID-19 : enjeux et réponses juridique - 09/2019 (Philippe TERNEYRE - Louis de FONTENELLE)

Le cas échéant, autres collaborations (co-encadrant et laboratoire concerné) :

Financement du projet de thèse

En cas de financement à 50 %, le cofinancement est-il déjà identifié (oui/non) : oui

Si oui, préciser la nature du cofinancement (ANR, partenaire privé, Ademe, etc.) : E2S UPPA, energy environment solutions, label d'excellence I-SITE, le consortium UPPA - Inria - INRAe - CNRS

Si le cofinancement n'est pas encore confirmé, date prévue de réponse du cofinancier : mai 2021

En cas de non-obtention du cofinancement demandé, une autre source de cofinancement est-elle identifiée (oui/non) : oui

Si oui, laquelle : ARED

Sollicitez-vous un co-financement Is-Blue (y compris ARED Is-Blue) (oui/non) ? oui

Important : Veillez à bien compléter les différents co financements sollicités sur le serveur Thèses en Bretagne Loire lors

Projet de thèse en cotutelle internationale

S'agit-il d'un projet de thèse en cotutelle internationale dans le cadre d'une convention (oui/non) : **non**

Si oui, préciser l'établissement pressenti (et le pays de rattachement) :

Ce projet de thèse fera-t-il l'objet d'un cofinancement international (oui/non) : **non**

(Rémunération du doctorant par l'établissement implanté sur le territoire régional (18 mois sur 36 mois), et l'établissement étranger, qui s'engage également à rémunérer le doctorant dans le cadre de son séjour à l'étranger, soit durant 18 mois -a minima-)

En cas de cofinancement international, préciser -si vous en avez connaissance- l'organisation du calendrier des périodes de séjour :

Préciser quel est le stade du projet international (joindre une lettre d'engagement du partenaire)

Présentation du projet (en langue française ou anglaise, 2 à 3 pages)

merci de respecter ce format maxi compatible avec extranet région

Résumé du projet (4000 caractères maxi espaces compris) :

The development of offshore renewable energy (ORE) is necessary to achieve the new energy mix for the energy transition (greenhouse gas reduction targets). The installation and operation of offshore wind farms has so far required the coherence of the programming means and operating conditions provided for by energy law with the legal regimes for activities in maritime spaces. However, the conditions for integrating offshore wind production into the energy mix raise other issues related to the transport and storage of the electricity produced. The intermittent or variable nature of offshore wind power raises difficulties in adjusting electricity demand and supply. The storage of energy produced by ORE becomes a key issue in order to achieve greater production of electricity from renewable sources. Although not well developed, the storage of energy from renewable sources is possible by using different technical means: batteries, potential energy (pumped-storage stations, etc.), heat, gas production such as hydrogen (after electrolysis of water) or methane or fuel (methanol). Thus, offshore renewables will also be sources of other energy carriers. In the future, the development of offshore wind farms must therefore be thought out taking into account the infrastructures for production, transport and storage, and in conjunction with other energy carriers such as hydrogen. OREs could thus play a role in energy storage and in the management of electricity production. The development of a hydrogen sector to store energy and to directly supply means of transport or large industries is partly linked to the development of offshore wind power.

Numerous questions then arise as to the programming, planning, economic conditions of production, financing and regulations that will be necessary to facilitate the development of the various infrastructures for energy production,

storage and transport. One of the major difficulties lies in the articulation between energy law in general and other legislation relating to offshore renewable energy. Similarly, the coordination between the law of production, storage and transport activities, in particular of different energy carriers, is an important issue in this aspect of the energy transition. The coordination of energy policy choices and the taking into account of the specificities of maritime law and the maritime context will be conditions for the success of an energy mix requiring the development of renewable energies at sea. Furthermore, the dimension of maritime spatial planning should not be neglected in the perspective of the use of new fuels for maritime transport or the role of energy "hub" of seaports.

The aim of this thesis is to research the legal regimes that govern the programming and development conditions of ORE and to analyse their relevance to the integration of these energies into the French energy mix. We can expect such research to contribute to the understanding of the evolution of several branches of law (or at least legal regimes). Thus, energy law, which has become a law of energy transition, could acquire a guiding character with regard to the rules of land and maritime infrastructure development. The principles and methods of environmental law should play an important role in this process, while the law (including environmental law) applicable at sea and on the coast is subject to adaptation.

Présentation détaillée du projet :

1 - Hypothèse et questions posées, état de l'art, identification des points de blocages scientifiques (4000 caractères maxi espaces compris)

Offshore wind farms represent an important contribution to the share of renewable energy in the French energy mix. An adequate legal framework is a condition for the integration of ORE in the energy mix. The question linked to this observation can be expressed in a general way: how does the law evolve or should it evolve to meet the objective of energy transition? The question arises for the rules of energy law contained in the Energy Code, but also for those belonging to other branches such as environmental law or town planning law. The confrontation of this legal construction with the law applicable at sea and on the coast is a specific issue.

The main questions aim to qualify, in law, the activities related to the installation of means of production, production, transport and storage of energy, to delimit their scope, to seek the legal rules likely to apply, to note their relevance, their lack or their defects.

The legal regimes governing the development of offshore wind farms are now fairly well known. The principles, rules, application of these rules by the administration and their interpretation by the courts, as well as the inconsistencies or inadequacies of the regulations, are analysed by the doctrine (B. Le Baut-Ferrarese, "Les énergies renouvelables en milieux aquatiques sous le regard du droit", Revue EEI, n° 2, February 2019; G. Guéguen-Hallouët and H. Levrel (dir), *Énergies marines renouvelables: enjeux économiques et juridiques*, Paris, Pédone, 2013, p. 53-72; L. Bordereaux and C. Roche, "Du droit du littoral au droit de la mer : Quelques questions autour des énergies marines renouvelables", DMF n° 742, 1 December 2012, N Boillet, *La production d'énergie en mer*, in *Droits maritimes*, Dalloz, 2021, also two theses: F. Schneider, 2013, A Bonis, 2013). However, it must be noted that these regimes are constantly evolving and that there is a constant need to adapt them to new economic, environmental and technological issues.

The need to store the energy produced and to use other energy carriers has recently become apparent. Some questions are thus specific to the subject of energy storage (embryonic regulation). For example, what legal rules apply depending on the form of storage? The question is whether there is a legal regime covering the storage of these energies or whether there are only specific rules for this or that form of storage. Furthermore, what about the hybrid activity of production and storage? The thesis should make it possible to know how the production activity and the storage activity can be articulated, complement each other or, on the contrary, present incompatibilities on the legal level. Thus, the absence of specific rules for energy storage could be a limitation in the analysis of the subject, but it could also underline the interest of an absence of regulation for the development of offshore renewables or on the contrary the need to establish a regulation whose content could be proposed.

The integration of ORE in the French energy mix will undoubtedly reinforce the assembly character of energy law (C. Boiteau, PH. Terneyre, 2017). The articulation between norms will concern both the relationship between programming and production, production activity and those of transport and storage, electricity production and gas production.

2 - Approche méthodologique et techniques envisagées : (4000 caractères maxi espaces compris)

The methodological approach of legal research will consist in analysing the relevance and coherence of the norms applicable to a given situation according to a given purpose.

In the first year of the thesis, the method followed will aim at identifying and analysing the technological means of production and storage of renewable energy at sea and their factual consequences concerning the people involved, the techniques and financial, material and human means implemented, the necessary facilities, construction and occupation, in order to understand the legal issues arising from them. At the same time, the identification and qualification of applicable rules will be carried out. Documentary research will classically focus on the collection and analysis of legal sources, international (conventions, recommendations), European (legislation, decisions, guidelines) and national (laws and regulations) texts, case law of courts and tribunals, legal doctrine. Most of the bibliography relating to the general framework of offshore renewable energies is already well documented thanks to the publications of the AMURE laboratory researchers. In addition, energy law is the subject of many publications in journals relating to public law (national, European, international). There are also journals specialising in maritime law and law of the sea. The identification of legal issues relating to the articulation of legal regimes in the field of MRE production and storage should lead to a general problematic around which the plan of the thesis will be progressively built.

In the second year, depending on the results obtained, the relevance of a comparative analysis with other European or American states will be assessed. If necessary, research in comparative law will therefore be carried out. The necessary additional documentary research will be carried out. The end of the second year will allow the analysis to be advanced. The parts of the thesis whose analysis is completed will be written (introduction).

The third year will be devoted to writing the thesis.

3 - Positionnement et environnement scientifique dans le contexte régional, national et international :

The UMR AMURE provides a very favourable scientific context for the research envisaged. Within the laboratory, several theses have been defended or are in progress on the issue of renewable marine energy in law and economics. Several legal researchers, including the supervisors, have organised scientific events on this theme and have published substantial studies on this subject (G. Guéguen-Hallouët, A. Cudennec, N. Boillet).

The participation of the supervisors in several research networks, such as the GDR EMR of the CNRS, the Société française de droit de l'environnement or the Association française du droit de l'énergie, should facilitate the constitution of a relevant thesis committee able to follow the progress of the thesis under the best conditions. The HDR defence of one of the supervisors facilitated dialogue with members of the jury who are among the best French specialists in energy and regulatory law. The supervisors are also involved in the Mastere EMR of ENSTA.

The thesis project is developed in collaboration with the TREE UMR laboratory (Energy and Environmental Transitions) of the University of Pau and Pays de l'Adour and the I-site E2S (PIA2). Researchers from the two laboratories (AMURE and TREE) have already had the opportunity to collaborate during a conference in Pau organised in 2018 by UPPA on the production of renewable energy in aquatic environments. The conjunction of forces between specialists in energy transition (TREE) and others in maritime activities (AMURE) provides a particularly beneficial framework for this thesis topic.

At the international level, the relations of the AMURE laboratory with the University of Chile, within the framework of a previous co-direction of thesis, and with the University of Dalhousie (regular collaborations) are favourable to possible exchanges concerning international or comparative law.

4 - Contexte scientifique et partenarial : éléments généraux (ERC, CPER, FEDER, Breizhcop ...) (4000 caractères maximum espaces compris)

The energy transition and the case of offshore renewable energies are at the heart of regional scientific research and territorial development concerns. The energy transition is one of the objectives of the 2015-2020 CPER and will remain important in the 2021-2027 CPER. The region of Brittany supports ORE and has a very favourable ecosystem with, in particular, France Energies Marines, a national institute for the energy transition dedicated to MRE, the Pôle Mer Bretagne Atlantique, ENSTA Bretagne, Ifremer, etc. The Breizh cop aims to: - prioritise the development of research and higher education on the challenges of transitions and - position Brittany as a leading region in the ORE market.

Vous sollicitez un financement ISblue, ou une ARED ISblue :

Précisez le lien du sujet avec les thèmes ISblue

Thème ISblue	Thème principal	Thème secondaire (si nécessaire)	Autre (si nécessaire)
la régulation du climat par l'océan		X	
les interactions entre la Terre et l'océan			
la durabilité des systèmes côtiers	X		
l'océan vivant et les services écosystémiques			
les systèmes d'observation à long terme			

Expliquez/précisez en quelques lignes dans quelle mesure votre demande correspond à l'un ou plusieurs des critères ISblue ci-dessous :

1- Originalité, impact potentiel du projet (4 lignes maxi)

According to the objectives of the energy and climate policy, offshore renewable energies (offshore wind) are part of the French energy mix. The success of the energy transition depends on the relevance and coherence of the European and national legal regimes for the programming, planning and operation of MRE (other carriers/hydrogen) production and storage infrastructure.

2- Positionnement international du sujet, cotutelle ou co-encadrement international (4 lignes maxi)

The project focuses on the discipline of law (national and European) and does not include international co-supervision. Nevertheless, the subject of the thesis lends itself to international comparisons. It is envisaged that the analysis of comparative law will be enriched, which could call for collaboration with the usual partners of the UMR AMURE (such as the MELAW of Dalhousie University in Canada).

3- Effet intégrateur entre unités de recherche et / ou interdisciplinarités (4 lignes maxi)

The thesis will be co-supervised by Louis de Fontenelle, teacher and researcher at the University of Pau and Pays de l'Adour, holder of the MOVE E2S-UPPA chair "Mutations of mobility for sustainable development" since 2020. This thesis will intensify the collaboration and the production of publications between two laboratories with a strong interdisciplinarity (law-economy-social sciences) the UMR AMURE and the UMR TREE UPPA.

4- Potentiel d'insertion à un haut niveau dans la communauté académique ou non académique du docteur (4 lignes maxi)

Obtaining the PhD will provide the holder with a high level of competence in a field of knowledge of primary

importance (the energy transition). The doctor will be able to rely on skills in the field of energy as well as maritime activities, obtained within two laboratories that are strongly open to the socio-economic world. The quality of the thesis will determine the possible qualification for the position of EC.

Le candidat

Profil souhaité du candidat (spécialité/discipline principale, compétences scientifiques et techniques requises) :

The candidate must hold a Master's degree in the field of energy, environmental or maritime law (or equivalent). He or she must have demonstrated scientific research skills, in particular through participation in a seminar, the production of a thesis or participation in a research project.

ATTENTION :

Tout dossier non déposé sur le serveur dans les délais indiqués, ne pourra être pris en compte notamment par les instances ISblue, conseil de l'EDSML.