

PROPOSITION DE SUJET DE THESE

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

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Identification du projet

Acronyme du projet (8 caractères *maximum*) : LATAN

Intitulé du projet en langue française : Vers une nouvelle méthode de mesure de l'application du droit de l'environnement marin

Intitulé du projet en langue anglaise : Measuring Marine Environmental Law implementation and enforcement - Towards A New methodology

Domaine d'innovation stratégique (DIS) du projet

Cocher le DIS prioritaire au sein duquel le projet de thèse s'intègre.

- DIS 1 : Innovations sociales et citoyennes pour une société ouverte et créative
- DIS 2 : Chaîne alimentaire durable pour des aliments de qualité
- DIS 3 : Activités maritimes pour une croissance bleue
- DIS 4 : Technologies pour la société numérique
- DIS 5 : Santé et bien-être pour une meilleure qualité de vie
- DIS 6 : Technologies de pointe pour les applications industrielles
- DIS 7 : Observation et ingénieries écologique et énergétique au service de l'environnement

Si aucun DIS ne correspond, cocher « Projet Blanc ».

« Projet Blanc »

Préciser le sous-domaine correspondant : 3C-3D-3E

DIS secondaire si nécessaire : D7- 7A

Présentation de l'établissement porteur (bénéficiaire de l'aide régionale)

Établissement porteur du projet : UBO

Ecole Doctorale : EDSML

Identification du/de la responsable du projet (futur-e directeur-trice de thèse)

Nom du laboratoire d'accueil : LEMAR

Code du laboratoire (U/UMR/USR/EA/JE/...) : UMR 195

Directeur du Laboratoire : Luis Tito de Morais

Nom de l'équipe de recherche : DISCOVERY

Nombre HDR dans le laboratoire : 48

Nombre de thèses en cours : 47

Nombre de post-docs en cours : 12

Nom et prénom du directeur de thèse (HDR), porteur du projet : Marie Bonnin

- **e-mail** : marie.bonnin@ird.fr

- **Téléphone** : 02 90 91 55 54/06 07 32 06 78

- **Publications récentes du directeur-trice de thèse** (nb total et 5 références max au cours des 5 dernières années) :

Nombre total de publications : 15 articles, 3 ouvrages en tant qu'auteur, 3 ouvrages en tant qu'éditeur, 15 chapitres d'ouvrages, 52 communications.

2016. Rodary E., Bonnin M., Bidaud C., Méral P., L'influence des services écosystémiques sur les aires protégées, in Méral P., Pesche D., *Services environnementaux et usages de l'espace rural*, Editions Quae, pages 223-242.

2016. Bonnin M., Ly I., Queffelec B., Ngaido M., Droit de l'environnement marin au Sénégal, IRD-PRCM, 587 pages. Handbook available in open Access at:

http://www.prcmarine.org/sites/prcmarine.org/files/droit_de_lenvironnement_au_senegal_o_1.pdf

2015. Bonnin M., Laë R., Behnassi M. (Ed). Les aires marines protégées, Défis scientifiques et enjeux sociétaux, Editions de l'Institut de Recherche pour le Développement, Paris, 190 pages.

2014. Bonnin M., Ould Zein A., Queffelec B., Droit de l'environnement marin et côtier en Mauritanie, IRD, CSRP, 257 pages.

2013. Pesche D., Méral P., Hrabanski M., Bonnin M., Ecosystem services and payments for environmental services: two sides of the same coin ?. In: Muradian R. (ed.), Rival L. (ed.) *Governing the provision of ecosystem services*. Dordrecht: Springer, 2013, p. 67-86. (Studies in Ecological Economics).

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

Nom	Sujet	Financement	Date de soutenance	Situation prof.
FOTSO Philippe	Les conditions juridiques d'intégration environnementale dans la Planification Spatiale Marine (PSM).	UBO	Automne 2019	Boursier

Co-directeur-trice de thèse et co-encadrant scientifique¹ :

A co-supervision with a partner from an American University is envisaged for this thesis. Two options are possible.

The first is already agreed in principle because the proposed Professor Kevin E. Davis is specialized in the critical analysis of law measurement initiatives and is part of the OceanLAM project. The PhD system of the NYU School of Law's Juridical Science Program is not a priori compatible with co-supervision. Only co-supervision could be possible.

The second option is the YCEL (Yale Center for Environmental Law), which has developed a work programme for several years on the use of measurement in the field of environmental law (Environmental Performance Index). The experience of this program could be very interesting even if it does not put in place legal indicators.

The Thesis Director will carry out a two-month mission to the Faculty of Law of New York University in June and July 2019 and will meet with YCEL researchers on that occasion. This mission is part of the development of the ERC OceanLAM project and aims to establish an effective collaboration with Kevin Davis, project partner and to develop new collaborations. In order to allow, if possible, the setting up of a co-supervision, the final choice of the co-supervisor will be finalized at the end of June.

Laboratoire de recherche co-encadrant : New York University School of Law

- **e-mail** : davisk@mercury.law.nyu.edu

- **Téléphone** : (212) 992-8843

¹ 5 Publications du Prof. K. Davies liés à la thématique de la thèse :

Edition d'ouvrage : (1) *The Quiet Power of Indicators: Measuring Governance, Corruption, and Rule of Law* (Cambridge University Press, 2015) (with Sally Merry and Benedict Kingsbury). (2) *Governance by Indicators: Global Power through Quantification and Rankings* (Oxford University Press, 2012) (with Angelina Fisher, Benedict Kingsbury, and Sally Merry).

Articles: (3) Data and Decentralization: Measuring the Performance of Legal Institutions in Multilevel Systems of Governance, 102 *Minnesota Law Review* 1619-1647 (2018); (4) Indicators as a Technology of Global Governance, 46(1) *Law & Society Review* 71-104 (2012) (with Benedict Kingsbury and Sally Merry); (5) Taking the Measure of Law: The Case of the *Doing Business Project*, 32 *Law & Social Inquiry* 1095-1119 (2007) (with Michael Kruse).

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

Résumé du projet (4000 caractères maxi espaces compris)

Curbing climate change and protecting the environment is Humanity's challenge for the beginning of the XXIth century. The need to act has been internationally recognized for several decades now (Rio Déclaration 92, Stockholom Declaration 72), leading to a dramatic inflation of the number of legal texts addressing the protection of the environment. Whereas the predominant mantra is focused on the new laws needed, we are currently unable to state which existing laws are *really* implemented and thus susceptible to have a protective effect on the environment.

The world's largest ecosystem, the ocean, is facing multiple threats severely damaging its health. The United Nations has set the protection of seas and oceans as a priority. Therefore, it is critical to make sure the necessary legal framework is effective. For now, we lack sufficient knowledge on the implementation of both national and international marine environmental law. Implementation refers to the study of the rule's legal enforcement process: it controls for the existence of enabling texts, penalties, and jurisprudence. Moreover in a world ruled by data, measures of performance and metrics, this ignorance contributes to isolate research in law.

The current knowledge gap on the implementation of environmental law has been underlined by several reports and work programmes on the state of the environment at the international, regional and national levels: Global Environment Outlook assessment (UN Environment, 2017); First marine global assessment (United Nations, 2016), Decision n°1386/2013/UE, priority objective 5. States, researchers and stakeholders need reliable legal data. There is a pressing need to go a step further in legal research through quantitative and qualitative monitoring of law enforcement outputs. This PhD thesis will propose an innovative approach in marine and coastal environmental law by designing and testing a methodology to measure the implementation and enforcement of marine environmental law.

The proposed methodology is based on the interdisciplinary identification of prime scientific questions for the protection of the oceans. For each of these scientific questions, the related legal text will be identified. This innovative approach in legal research will allow to identify legal indicator. For example, oceans' pollution by single-use plastics could be chosen as a scientific question to address; the legal text regulating the ban on single-use plastics will be studied. Above all, the method implies to assess the implementation of executive texts and enforcement of the rule.

In the objective to make this thesis feasible in 3 years, 5 indicators will be experimented in 4 distinct case studies bordering the Atlantic Ocean: the Celtic Sea (Ireland, Great Britain, France), West Africa (Senegal, Cabo Verde), Brazil and Gulf of Mexico (United States of America, Mexico, Cuba). These case studies will offer the opportunity to test the method in countries with different socio-economic and legal systems.

Présentation détaillée du projet

1 - Hypothèse et questions posées, identification des points de blocages scientifiques

The first attempts to measure law faced several pitfalls, among which the lack of available data, of competent staff to census regulations (Siems, 2011) and the necessary "mathematical turn in legal thinking" described by David R. Amariles (Amariles, 2015), which requires to review traditional legal methodologies. The frequent use of questionnaires has also been subject to criticism, leading to subjectivity and possible bias, partly due to the limited number of people interviewed (Bellivier and Noiville, 2014). Additionally, these methodologies address the perception of law or the impact of specific rules and regulations but not their implementation processes, overlooking a critical step in laws' evolution from text to effective protection.

The thesis will test two hypotheses: the opportunity to develop science-based indicators in law, and to measure both implementation and enforcement.

1. The definition of Science-Based Legal Indicators (SBLI)

The choice of indicators in this project will follow a scientific based approach. The identification of the prime scientific questions for ocean protection will be preliminary to the choice of legal indicators— a truly innovative approach. These indicators will be called Science-Based Legal Indicators (SBLI).

This SBLI approach prioritizes precision, objectivity and universality. As expressed by Reiling et al. (2007), "the biggest conceptual challenge in the design of performance indicators for the legal system is choosing what to measure". The innovative idea of this project is to identify the legal rule that responds to a given problem in order to study its implementation and enforcement.

2. Quantitative assessment of implementation and enforcement of marine environmental law

The measure of the implementation and enforcement of law requires the identification of a series of qualitative and/or quantitative necessary steps in the process. These steps will be called levels of implementation and enforcement.

To determine the levels of implementation of marine environmental law, a quantitative analysis based on the existence of legal texts relevant to the identified SBLIs will be combined with a qualitative analysis (e.g. enforcement decree,

existing and implemented sanctions or case-law). The key and challenge will be to identify levels of implementation and enforcement relevant for countries with different legal systems and levels of development, and to process the data to provide scoring.

2 - Approche méthodologique et technique envisagée

Cadre géographique

This thesis will be based upon 4 case study countries to test the methodology in zones where the data collection won't slow-down the work. The expected zones are: the Celtic Sea (Ireland, Great Britain, France), West Africa (Senegal, Cabo Verde), Brazil and Gulf of Mexico (United States of America, Mexico, Cuba). These case studies were chosen to offer a panel of countries with different legal systems and levels of development (*e.g.* Common law, Romano-Germanic legal systems; developing, in transition and industrialized countries). The supervisor's extensive working experience and network in these zones reinforce the project's feasibility.

Considering the international scope of the expected research, the PhD thesis is susceptible to be written in English. The Exclusive Economic Zone (EEZ) of the case study countries will be the geographical scope of analysis.

Champ d'application de la recherche

The legal scope of this project will be public law, both at national and international scales. Implementation and enforcement of domestic law will be assessed. The proposed approach is designed to be intrinsically federative at two levels: in legal and marine research. The objective is to promote a convergence of methodologies to foster oceans' legal protection (Pomade, 2018). In a legal research perspective, the objective is to combine analyses in various branches of law of the sea and environmental law (*e.g.* fishery, sea, exploitation) beyond traditional sectoral approaches. In a marine sciences perspective, interdisciplinarity intervenes mainly at the beginning of the project by interviews with marine scientist, specifically to establish the list of Science-Based Legal Indicators as a pre-requisite to build a common language.

Etapas méthodologiques

The thesis' first step will consist in identifying legal indicators to measure the implementation of marine environmental law and defining relevant levels of implementation. During the project's first six months, the PhD student will interview IUEM marine scientists to highlight prime scientific questions requiring legal protection for ocean protection. Five scientific questions and related SBLIs will finally be selected. This "natural sciences to law" approach is a truly innovative in legal research, and sets the effective protection of the environment as a priority. The levels of implementation and enforcement will be chosen in line with the preliminary work realised by M. Prieur (2018) and the work done by the research Director (Marie Bonnin) in the preparation of OceanLAM project. Three levels of implementation have been pre-identified:

Level 1. Quantitative: is there a text? Which is its legal nature (law, decree)?

Level 2. Qualitative: is the text directly applicable? If an executive decree is required, has it been adopted?

Level 3. Qualitative: is the text enforced? Is there a specialized institution of the implementation and the control of compliance (*i.e.* organic context)? Is information on the implementation of the SBLI available (*i.e.* substantive context)? Do exceptions challenge the rule? Are there examples of sanctions or case law?

The second step will be data collection. For each SBLI and in each study zone, the PhD Student will collect legal information documenting the levels of implementation. The data compilation carried out in the framework of Ecolex will facilitate direct access to original and translated texts. At least five main legal databases² will be consulted.

The third step will introduce quantitative methods. The level of implementation and enforcement of each chosen SBLI will be evaluated in consistency for each zone, the level of implementation of the legal texts will be calculated. Then, the mean score in each zone will be calculated to give a consolidated indicator³. Additionally, the work developed during the first two steps will offer new perspectives in law data exploration, through multi-criteria and multidimensional analyses. For example, visualising data per level of implementation (only level 1) for a specific field or legal indicator will open new research perspectives, and allow the comparison of countries across regions, levels of development, legal systems, political systems and state organization.

Short Gantt Diagram of the Thesis progress

Year 1 Sem1	Year 1 Sem 2	Year 2 Sem 1	Year 2 Sem 2	Year 3 Sem 1	Year 3 Sem 2
<ul style="list-style-type: none"> • Interviews • List of SBLIs • Bibliography 	Data Collection	<ul style="list-style-type: none"> • Data collection • Management of missing Data 	<ul style="list-style-type: none"> • Scoring • Multi-criteria analyses 	<ul style="list-style-type: none"> • Multi-criteria analyses • Writing 	Finalisation

² Ecolex, Faolex, PNUE, Eur-Lex, UNTreaty

³ Consolidated indicator is the compilation of individual indicators on the basis of an underlying model (OECD and JRC European Commission 2008).

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

This thesis is timely. More and more international and regional organisations question the implementation of law. In Europe, beyond the IMPEL network, a new momentum for the evaluation of environmental law has been launched by Environmental Implementation Review⁴, while the OECD works on the implementation of environmental policies and UN Environment launches a programme on this thematic.

In the academic field, the evolution of legal research towards quantitative methodologies and metric assessments will facilitate interdisciplinary exchanges and imply questionings on the role of indicators in law.

This thesis is designed in this dual perspective. It will train a student on a novel thematic with concrete uses, but also on advanced research on the recourse to indicators in law. The student will be able to consider both academic and legal career opportunities.

4 - Pour la région Bretagne: adéquation du projet au regard du DIS de rattachement (et/ou du DIS secondaire).

In fine, this project aims at improving the protection of marine environment, and will thus contribute to nurture sustainable marine activities.

5 - Si « projet blanc » (hors DIS), préciser les raisons de ce choix N.A.

6 - Si lien avec projet ERC, préciser lequel :

This thesis' first results will provide preliminary data and conceptual progress to resubmit the OceanLAM project to ERC-CoG funding in 2020. The thesis supervisor and Principal Investigator of this project, Marie Bonnin has already submitted OceanLAM to ERC funding in 2018. It has been rated A in the first step, and B in the second (corresponding to the best 80%-90% of the submitted projects). The reviewers highlighted the high potential of this project. Completed state of the art, slightly more hindsight on the method and first publications could trigger funding. This thesis' first results will give substantial material to answer these identified criticisms.

7 - Autres informations utiles (CPER, FEDER, concernant la politique régionale)

By contributing to the development of international relations and of a marine research field, this thesis is in line with the regional political strategic objectives.

8 - Le cas échéant, précisez le lien du sujet avec les thèmes ISblue

- la régulation du climat par l'océan
- les interactions entre la Terre et l'océan
- la durabilité des systèmes côtiers
- l'océan vivant et les services écosystémiques
- les systèmes d'observation à long terme

Le cas échéant (si financement ISblue demandé) : en regard de la formation par la recherche du futur docteur, perspectives d'insertion professionnelle dans le milieu académique et non académique

This thesis will offer career opportunities in international academic research, to develop innovative research in law. Besides, many international organisations currently design programmes to assess the implementation of environmental law (e.g. OECD, UN), representing as many non-academic job opportunities for the future doctor.

9 - Contexte scientifique et partenarial : éléments généraux

The interviews planned in the project's first year will associate several IUEM researchers specialised in marine sciences (economy, ecology, biology, physics, geography) to the identification of SBLIs.

The data collection will be facilitated by the supervisor's integration in environmental law networks in the 4 case studies (e.g. Réseau Africain de droit de l'environnement, World Commission of Environmental Law). The supervisor has also been working for several years in Brazil and West Africa, and has developed strong partnership there.

Last, the PhD student will be integrated in the project PADDLE, offering mobility funding to Brazil, Senegal and Cabo Verde. This will facilitate data collection, as the PhD student will be able to travel in some of the case study countries.

10 - Si projet de co-tutelle, internationale, précisez le pays et l'établissement :

11 - Financements Région Bretagne acquis par le porteur au cours des 3 dernières années (titre, montant)

Title	Nature	Amount
Modélisation de l'évolution du droit de l'environnement marin et côtier pour un développement durable des océans	Boost ERC	25000 €

12 - Si projet cofinancé, nom du cofinancier (sollicité et ou acquis) : ISBlue funding applied for.

⁴ http://ec.europa.eu/environment/eir/index_en.htm, accessed 3th of January 2019.

Le – la candidat.e

Profil souhaité du candidat (compétences scientifiques et techniques requises)

The Candidate must hold a Master's degree in law or political and legal science and must have followed a specialisation course in environmental law.

The candidate must have a sufficient level of English to write in English, and thus participate in English-language publications and communications during the thesis.

The candidate must have sufficient autonomy to go on a mission to seek legal data that would not be accessible in online databases and to conduct interviews in the countries of the study areas.

The candidate's motivation to participate in the development of a more global project, of which this thesis would be the first stone, will also be a determining criterion.

Projet de thèse en cotutelle internationale

S'agit-il d'un projet de thèse en cotutelle internationale (*oui/non*) : peut-être ; co-encadrement a minima

Si oui, préciser l'établissement pressenti (*et le pays de rattachement*) : New-York School of Law, NYU, ou YCLE (United States of America)

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 : N.A.

Financement du projet de thèse

Part de l'enveloppe financière régionale affectée au projet :

Financement Région 100 % Financement Région 50 % (préconisé)

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.*) : ISBlue

Si le cofinancement n'est pas encore confirmé, date prévue de réponse du cofinancier : Printemps 2019

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

Annexe : Domaines et sous-domaines d'innovation stratégique

Domaines d'innovation stratégique

- 1/ Innovations sociales et citoyennes pour une société ouverte et créative
- 2/ Chaîne alimentaire durable pour des aliments de qualité
- 3/ Activités maritimes pour une croissance bleue
- 4/ Technologies pour la société numérique
- 5/ Santé et bien-être pour une meilleure qualité de vie
- 6/ Technologies de pointe pour les applications industrielles
- 7/ Observation et ingénieries écologique et énergétique au service de l'environnement

Ventilation en sous-domaines

D1 – Innovations sociales et citoyennes pour une société ouverte et créative

- 1A- Démarches d'innovation sociale et citoyenne
- 1B- E-éducation et e-learning
- 1C- Patrimoine et tourisme durable
- 1D- Industries créatives et culturelles
- 1E- Transitions et mutations des modèles économiques des filières et des entreprises

D2- Chaîne alimentaire durable pour des aliments de qualité

- 2A- Qualité et sécurité sanitaire des aliments
- 2B- Nouveaux modèles de production agricole
- 2C- Usine agro-alimentaire du futur

D3- Activités maritimes pour une croissance bleue

- 3A- Energies marines renouvelables
- 3B- Valorisation de la biomasse marine et biotechnologies (pour toutes les applications)
- 3C- Valorisation des ressources minières marines
- 3D- Nouveaux modèles d'exploitation des ressources vivantes aquatiques (pêche et aquacultures)
- 3E- Navire du futur
- 3F- Sécurité et sûreté maritime

D4- Technologies pour la société numérique

- 4A- Internet du futur : objets communicants, cloud computing et big data
- 4B- Images et contenus
- 4C- Conception logiciels
- 4D- Modélisation numérique
- 4E- Réseaux convergents, fixes mobile broadcast
- 4F- Cybersécurité

D5- Santé et bien-être pour une meilleure qualité de vie

- 5A- Prévention – santé – bien-être
- 5B- Nouvelles approches thérapeutiques alliant génétique, bio-marqueurs et biomolécules
- 5C- Technologies médicales, diagnostiques et thérapeutiques et e-santé

D6- Technologies de pointe pour les applications industrielles

- 6A- Photonique et matériaux pour l'optique
- 6B- Matériaux multi-fonctionnels
- 6C- Technologies en environnements sévères
- 6D- Electronique, robotique et cobotique pour l'ingénierie industrielle
- 6E- Systèmes de production avancés de petites et moyennes séries (usine du futur)

D7- Observation et Ingénieries écologique et énergétique au service de l'environnement

- 7A- Observation, surveillance et gestion de l'environnement et des éco-systèmes et de leurs inter-actions
- 7B- Réseaux énergétiques intelligents
- 7C- Système constructif performant et durable (éco-construction et éco-rénovation, TIC et bâtiment)
- 7D- Véhicules et mobilités serviciels durables
- 7E- Eco-procédés, éco-produits et matériaux bio-sourcés.