



PhD in Climate Change Mitigation in the Maritime Sector

About the position

We have a vacancy for a 3 year PhD position in the Industrial Ecology Program ([IndEcol](#)), within the Department of Energy and Process Engineering.

The PhD position is part of the research project Climate Change Mitigation in the Maritime Sector (CLIMMS) funded by the Norwegian Research Council. The objective of the project is to identify pathways for the transformation of the international shipping sector towards the IMO goal of halving emissions by 2050, en route to the 2°C target. The project is affiliated with the [Smart Maritime Center for Research Based Innovation](#). Professor Anders Hammer Strømman from NTNU is leading the project. CLIMMS is a collaborative research project involving leading Norwegian shipping companies: Grieg Star, Wallenius Wilhelmsen Ocean, Høegh Autoliners, Klaveness, Solvang, Kristian Gerhard Jebsen Skipsrederi, BW Group, with Sintef Ocean as research partner.

The Industrial Ecology Program (IndEcol) is an interdisciplinary research and teaching program managing its own International MSc program. IndEcol is well recognized for its work in the areas of life-cycle assessment, material flow analysis, and the use of input-output analysis for environmental assessments, as evidenced by numerous publications and international prizes. Current research activities are funded by national and European agencies, as well as industrial partners. There is a long tradition of working on both industrial and policy applications. Key faculty staff currently serve or have recently served as members of the IPCC, the UNEP Resource panel and UNEP/SETAC task forces.

The Head of Department is Professor Terese Løvås. Professor Anders Hammer Strømman will be the main supervisor and Dr Helene Muri will be the co-supervisor.

Main duties and responsibilities

The core content of the work is advancement and application of scenario models of the global shipping fleet for the identification and assessment of different low emission transformation pathways. The work will embark from the MariTEAM model developed in SFI Smart Maritime. This model allows for the estimation of ship emissions of greenhouse gases and aerosols, with high temporal and spatial resolution from all AIS transmitting ships across all major segments of the global maritime fleet. The PhD position will be involved in developing scenario analysis capacities extending on the current model capabilities.

Qualification requirements

Essential qualifications:

The PhD-position's main objective is to qualify for work in research positions. The qualification requirement is completion of a master's degree or second degree (equivalent to 120 credits) with a strong academic background in a relevant subject area or equivalent education with a grade of B or better in terms of [NTNU's grading scale](#). Applicants with no letter grades from previous studies must have an equally good academic foundation. Applicants who are unable to meet these criteria may be considered only if they can document that they are particularly suitable candidates for education leading to a PhD degree.

- Candidates must hold a Master's degree in one of the following or equivalent areas: i) Integrated Assessment Modelling, ii) Optimization and Operations Research, iii) Life Cycle Assessment and Industrial Ecology, iv) Naval Engineering, v) Climate Science or Climate Modelling, vi) Applied Physics or Mathematics, vii) Computer Sciences
- The successful candidate must be well versed in linear algebra in particular, matrix algebra and use the of programming languages to model linear systems (e.g. Matlab, R)
- Basic understanding of fluid mechanics
- Strong, well matured and well-articulated motivation for working on the topic at hand is required. Candidates must therefore in their application provide a 1-2 page letter where they describe: i) their motivation for doing a PhD in this domain and ii) how they see their competence and capabilities as relevant for the position
- Candidates are expected to be familiar with key relevant publications from the supervisors
- The candidates selected for interview will be asked to demonstrate good ability to absorb and present material from the research frontier on the matters at hand
- Strong analytical capabilities
- Good written and oral communication skills
- Fluent English language skills (written and oral)

Desirable qualifications:

- Competence in mathematical modelling, simulation or optimization (e.g., Matlab, R, GAMS, C++, Python) is strongly desired
- Competence in data processing and parsing as well as data management experience is desired
- Advanced understanding of fluid mechanics

- An interest in climate and environment

The appointment is to be made in accordance with the regulations in force concerning State Employees and Civil Servants and [national guidelines for appointment as PhD, postdoctor and research assistant](#)

NTNU is committed to following evaluation criteria for research quality according to [The San Francisco Declaration on Research Assessment - DORA](#).

Personal characteristics

- The successful candidate will be working in a group with other professors and PhDs from different disciplines. The candidate is expected to embrace this setting and be a true team player.
- Self-driven with a strong ability to work independently when required.
- Motivated to work in a multi-disciplinary team with an interest in cross-disciplinary learning.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability, as well as motivation, in terms of the qualification requirements specified in the advertisement.

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and [inclusive work environment](#) with dedicated colleagues
- favourable terms in the [Norwegian Public Service Pension Fund](#)
- [employee benefits](#)

Salary and conditions

PhD candidates are remunerated in code 1017, and are normally remunerated from NOK 479 600 before tax, per year. From the salary, 2 % is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years.

As a PhD candidate, you undertake to participate in an organized PhD programme during the employment period. A condition of appointment is that you are in fact qualified for admission to the PhD programme within three months. Appointment to this PhD position requires admission to the PhD programme in Engineering.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criterias in the latter law will be prohibited from recruitment to NTNU.

After the appointment you must assume that there may be changes in the area of work.

General information

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background. Under the Freedom of Information Act (offentleglova), information about the applicant may be made public even if the applicant has requested not to have their name entered on the list of applicants.

About the application:

Questions about the position can be directed to Professor Anders Hammer Strømman, phone number (+47) 735 98948, e-mail anders.hammer.stromman@ntnu.no and Dr Helene Muri, phone number (+47) 73413299, e-mail helene.muri@ntnu.no

Publications and other academic works that the applicant would like to be considered in the evaluation must accompany the application. Joint works will be considered. If it is difficult to identify the individual applicant's contribution to joint works, the applicant must include a brief description of his or her contribution.

Please submit your application electronically via jobbno.no with your CV, letter, diplomas and certificates. Applications submitted elsewhere will not be considered. It is necessary to include a [Diploma Supplement](#) for European Masters Diplomas outside Norway. Chinese applicants are required to provide confirmation of Masters Diplomas from [China Credentials Verification \(CHSI\)](#).

Applicants invited for interview must include certified copies of transcripts and reference letters. Please refer to the application number IV-211/19 when applying.

Application deadline: 28.08.2019

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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of Energy and Process Engineering

We conduct research and teaching covering the entire energy chain, from resources to the end-user. We look at how energy is produced and used by humans and machines in a sustainable way with regard to health, climate change and the resource base. [The Department of Energy](#)

[and Process Engineering](#) is one of eight departments in the [Faculty of Engineering](#).

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