

Jobbnorge ID: 280434
Deadline: 5/31/2025
Website: <http://www.ntnu.no>
Scope: Fulltime
Duration: Temporary

We have a vacancy for a PhD Candidate with the topic

Towards Green Shipping: Modeling Maritime Transport within a Decarbonizing Energy System

This is NTNU

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 9,000 employees and 43,000 students work to create knowledge for a better world.

You will find more information about working at NTNU and the application process [here](#).

Video: <https://youtu.be/Xt-yHCN5QS0>

Background

There is a temporary PhD position for 3 years available at the [Department of Industrial Economics and Technology Management](#) - Section Managerial Economics, Finance and Operation Research. The position is resident at NTNUs campus in Trondheim. This is an educational position, which will provide promising research recruits the opportunity for professional development through studies towards a PhD-degree. The position is connected to the PhD program at the Faculty of Economics and Management and the faculty will be your employer.

The department endeavors to promote research that meets high International standards. Subsequently, contact with International institutions is important. Therefore, the department encourages the successful PhD Candidate to spend one to two semesters of the contract period at a foreign university. The department offers support in the planning of such scholarly visits.

The mission of Department of Industrial Economics and Technology Management is to carry out education and research activities at a high international level in the intersection between technology/natural sciences and business economics, management, and HSE to promote sustainable value creation in technology-based areas in industry, business, and public sector organizations in Norway.

About the position

The maritime sector is a key part of the global energy transition, but decarbonizing it presents major challenges—ranging from the high cost of green fuels and uncertain infrastructure availability to the lack of viable business models. Despite this complexity and the deep uncertainty around future technologies, fuel supply chains, and regulatory developments, the sector is often treated too simplistically in energy system and integrated assessment models, limiting their ability to inform robust transition strategies and policy.

This PhD project aims to close that gap by developing new methods and extending existing modeling frameworks to better capture the role of maritime transport in energy system models. The primary focus will be on the European level, while results will be validated and contextualized using both global and regional modeling frameworks. The project will likely build on the European energy system model EMPIRE, which can be extended and linked with the maritime fleet model MariTEAM to represent vessel technologies and fuel choices. Insights and data from the global model MESSAGEix can support consistency in assumptions on fuel availability, costs, and trade dynamics.

The research will analyze transition pathways across national, regional (short-sea), and global (deep-sea) scales, focusing on when and where infrastructure and fuel supply may emerge, how quickly they can scale, and at what cost. It will consider system-level constraints, retrofitting, fuel flexibility, and emerging technologies such as CCS and nuclear. A key research question is how robust maritime decarbonization strategies can be identified under long-term uncertainty in fuels, infrastructure, and policy. The work requires developing and applying large-scale optimization-based energy system models.

About the project

[FME MarTrans](#) is a Norwegian R&D centre for Maritime Energy Transition. It is an eight-year collaborative project with 65 partners within maritime industry and research, funded by the Research Council of Norway under the Research Centre for Environment-friendly Energy (FME) program. The focus is on research, innovation and education to accelerate the energy transition within the shipping industry, while increasing

value creation and exports for the Norwegian maritime industry. With total funding from the Research Council of Norway and the industrial partners of over NOK 300 million, this is the world's largest maritime research program of its kind.

Duties of the position

- Execute a PhD project within 3 years (including formal analysis and dissemination).
- Carry out research on a high international level
- Complete the necessary doctoral coursework as per NTNU's guidelines.
- Attend project meetings and develop a collaboration network with project partners.
- Disseminate research findings through national/international academic conferences and open access scientific journals that meet the requirements for the PhD position.

Required selection criteria

- The qualification requirement is completion of a master's degree or second degree (equivalent to 120 credits) in operations research, industrial engineering, marine technology, energy systems, applied mathematics or equivalent education within the areas relevant to the project. Applicants should have a strong academic background 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.
- The position requires excellent English oral and writing skills.

Preferred selection criteria

In addition, the following qualifications will contribute positively to the evaluation of the applicant:

- Background and/or experience relevant to the project topic
- Scandinavian language skills
- Documented experience with quantitative modeling, operations research, decision making under uncertainty, and systems analysis
- Documented experience/interest in maritime transport and the energy transition
- Proficiency in at least one programming language, e.g. Python, Julia, C++, or Java.

Recent graduates, or applicants who are in the final stage of their Master's program, are encouraged to apply. Such an applicant may be offered the position under the condition that the diploma will show satisfactory final term results.

Personal characteristics

- A high level of personal responsibility and initiative
- Ability to work independently as well as part of a team in accordance with the project objectives
- Ability to work in a structured way, set goals and make plans to achieve them
- Ability to work in interdisciplinary projects and teams
- Good communication skills, flexible and solution-oriented
- Curiosity and a strong motivation for the subject

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

We offer

- Exciting and stimulating tasks in a strong international academic environment
- Career guidance and [follow-up during the PhD period](#)
- Open and inclusive working environment with dedicated colleagues
- [Working capital](#) that can be used to implement the project
- Possibility for a research stay abroad
- As a public employee, you have favourable benefits as a member of the [Norwegian Public Service Pension Fund \(SPK\)](#)

You will be employed as a PhD Candidate at NTNU and will have access to [employee benefits and discounts](#).

Information about Working and living in Norway can be found at the following link: <http://www.nyinorge.no/en/Ny-i-Norge-velg-sprak/New-in-Norway/>

Diversity

Diversity is a strength, and at NTNU we aim to be an employer that reflects the diversity in society and that makes use of the potential of the population's collective skills. Our vision is [Knowledge for a better world](#) and [our values are creative, critical, constructive and respectful](#). We believe that an organization that is equal, diverse and gender-balanced is essential for us to achieve our goals.

We strive to attract employees with different skills, life experiences and perspectives to contribute to even better problem solving of our societal mission in research and education.

If you think this position is relevant and interesting, we encourage you to apply, regardless of gender, functional ability and cultural background, or whether you have been out of work for a period of time.

Salary and conditions

PhD candidates are remunerated in code 1017, at gross NOK 536.200,- per annum before tax. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years. The position is connected to the PhD program at the Faculty of Economics and Management and the faculty will be your employer. Appointment to a PhD position requires that you are admitted to the PhD programme in [Industrial Economics and Technology Management](#) within three months of employment, and that you participate in an organized PhD programme during the employment period. Your work place will be at the [Department of Industrial Economics and Technology Management](#).

As a result of the new Act relating to universities and university colleges with associated regulations of 01.08.2024, NTNU has, during a transitional period (for decisions on employment in recruitment positions before 1 August 2025), chosen to use the terms of employment in the old [regulations of 31 January 2006 no. 102 on terms of employment for positions such as postdoctoral fellow, research fellow, scientific assistant and specialist candidate](#).

The appointment is carried out in accordance with the principles of the [State Employees Act](#), and [Export control](#) (legislation that regulates the export of knowledge, technology and services). Candidates who, after assessment of the application and attachments, are considered to be in conflict with the criteria in the latter act, will not be able to be employed.

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

As an employee at NTNU, it is important that you keep yourself up to date with academic and organizational changes and adapt to them.

The position is subject to external funding.

For the necessary academic and social interaction, it is a prerequisite that you are physically present at campus in Trondheim and available to the institution on a daily basis.

About the application

The application and supporting documentation to be used as the basis for the assessment must be in English. Publications and other scientific work must follow the application. Please note that your application will be considered based solely on information submitted by the application deadline. You must therefore ensure that your application clearly demonstrates how your skills and experience fulfil the criteria specified above. Incomplete applications will not be considered.

- 1) Application letter concerning your motivation for completing a PhD (400 words/1 page)²⁾
- 2) A CV with information on education, previous research experience, together with authorized documentation of certificates and study records.
- 3) Copy of Master's thesis or other relevant publications. If you have recently submitted your Master's thesis, you can attach a draft of the thesis. Documentation of a completed Master's degree must be presented before taking up the position.
- 4) A short project outline containing proposals for an overall description of research questions, theoretical perspectives, methodological design for the project and progress plan (maximum 1000 words).
- 5) Name and address of three references

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education, both bachelor's and master's education, in addition to other higher education. Description of the documentation required can be found [here](#). Please note that diploma Supplement is required to attach for European Master Diplomas outside Norway. Chinese applicants are required to provide confirmation of Master Diploma from [China Credentials Verification \(CHSI\)](#).

If you already have a statement from [Norwegian Directorate for Higher Education and Skills \(HK-dir\)](#), please attach this as well.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal and interpersonal qualities. Motivation, ambitions, and potential for research will also count in the assessment of the candidates.

NTNU recognizes a wide range of academic contributions and has committed itself to The San Francisco Declaration on Research Assessment and CoARA (responsible assessment of research and recognition of a greater breadth of academic contributions in accordance with NTNU's social mission).

Please submit your application electronically via [jobbnorge.no](#) with your CV, diplomas and certificates. Applications submitted elsewhere will not be considered.

General information

For practical information about [working at NTNU](#), please visit this webpage.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you wish to be exempt from entry on the public applicant list, this must be justified. Assessment will be made in accordance with current legislation. You will be notified if the exemption is not granted.

Questions about the position can be directed to main supervisor Associate Professor Steffen Jaap Skotvoll Bakker (steffen.bakker@ntnu.no), and/or co-supervisors Professor Asgeir Tomasgard (asgeir.tomasgard@ntnu.no) and Professor Anders Hammer Strømman (anders.hammer.stromman@ntnu.no).

If you have any questions about the recruitment process, please contact HR Advisor Hilde Selli Egelie, e-mail: hilde.s.egalie@ntnu.no.

NTNU - knowledge for a better world

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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 Industrial Economics and Technology Management

We conduct research and teaching at an international level in the interface between technology/natural sciences and economics, management, and HSE (health, safety and the environment). Our goal is sustainable creation of value within technology-based areas in industry, business and the public sector in Norway. We have academic groups in Trondheim and Gjøvik. The [Department of Industrial Economics and Technology Management](#) is one of four departments in the [Faculty of Economics and Management](#).

Additional information

Place of service:

Høgskoleringen 1 7491 Trondheim (Trondheim Municipality)