

Jobbnorge ID: 287632
Deadline: 11/2/2025
Website: <http://www.ntnu.no>
Scope: Fulltime
Duration: Engagement

We have a vacancy for a PhD position within

Energy System modelling, market design and sector coupling

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

PhD position connected to the FME center InterPlay (<https://interplayresearch.no>).

There is a PhD position available at the [Department of Industrial Economics and Technology Management](#) - section of Managerial Economics, Finance and Operations 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 department's mission is to conduct educational and research activities that meets high international standards, at the intersection between technology/natural sciences and business economics/management/HSE to promote sustainable value creation within technological fields in industry, the private and public sector in Norway. We are also looking for those who have experience with, and show potential for, continuous out-of-the-box thinking in this interface.

About the position

This PhD project is part of the recently started center [FME InterPlay](#) (Integrated Hub for Energy System Analyses) which is a Norwegian national research center established to advance the integrated planning and analysis of energy systems, supporting Norway's transition to a low-emission society while balancing economic, environmental, and societal needs. The center coordinates development of advanced models, tools, and decision support for system integration, market design, and nature impact assessment. It places strong emphasis on education, aiming to train PhD, Postdoc, and MSc experts in energy system analysis, environmental impact assessment, and regulatory frameworks. FME InterPlay is led by SINTEF Energy Research, uniting over 30 partners from academia, industry, and public administration.

This PhD position focuses on developing and analysing large-scale sector-coupled energy market models (e.g., EMPIRE model, PyPsa, etc.) to understand how market incentives and regulatory frameworks shape low-carbon transitions. The candidate will evaluate how economic signals and regulations can foster optimal system-wide solutions proposed by long-term integrated models, identify barriers that prevent translating model insights into real-world implementation, and propose targeted regulatory or market design changes. The research involves cross-sector modelling (electricity, heat, hydrogen, etc.), and price formation analysis. The candidate will be co-supervised with NHH and have interactions with industry and research partners of InterPlay.

Duties of the position

- Conduct original scientific research relevant to the research topics above
- Publish and disseminate research results obtained in a suitable and timely manner
- The candidate must engage in FME Interplay activities and discussion with partners
- Complete mandatory PhD coursework during the initial part of the employment period
- Meet with and plan research tasks in collaboration with relevant research and industrial partners part of FME Interplay

Be prepared for changes to your work duties after employment.

Required selection criteria

- 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 Industrial Economics or equivalent education (e.g., Power Systems, Mathematics, energy economics, etc.) 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.
- Knowledge of optimization models, operations research methods, and mathematical programming
- Basic understanding of energy system modelling, power markets and the interactions between multiple carriers
- Proficiency in at least one programming language, e.g. C++, Matlab, Java, Python, Julia or others

PLEASE NOTE: For detailed information about what the application must contain, see paragraph "About the application".

The appointment is to be made in accordance with [NTNUs guidelines for recruitment positions](#) and [Regulations for the degrees philosophiae doctor \(ph.d.\) and philosophiae doctor \(ph.d.\) in artistic development work at the Norwegian University of Science and Technology \(NTNU\)](#) for general criteria for the position.

Preferred selection criteria

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

- Knowledge of Norwegian or another Scandinavian language
- Knowledge of Stochastic Programming
- Knowledge in energy transition challenges

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

Personal qualifications which we see contributing positively to the research team are independence, work capacity and enthusiasm. We are also looking for candidates with social skills benefiting the work environment for the PhD candidates and in general.

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 with close links to industry
- An open and [inclusive work environment](#) with dedicated colleagues
- Favourable terms in the [Norwegian Public Service Pension Fund](#)
- [Employee benefits](#)
- Career guidance and follow-up during the PhD period
- Working capital that can be used to implement the project
- Possibility for a research stay abroad

Information about Working and living in Norway can be found at the following link: <http://www.nyinorge.no/en>.

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.

At NTNU we want to increase the proportion of women in scientific positions.

Salary and conditions

PhD candidates are remunerated in code 1017, remunerated at gross NOK 550 800,- per year 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.

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 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.

The application must include:

- Application letter concerning your motivation for pursuing a PhD
- A CV with information on education, previous research experience, together with authorized documentation of certificates and study records.
- Academic work (e.g., academic paper or master thesis). The work should be attached, not linked.
- Documentation and diplomas of courses and grades achieved in your master's and bachelor's degrees.
- 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. If your institution uses "diploma supplement" (normal for most European institutions), you must attach this. A description of the documentation required can also be found [here](#). If you already have a statement from [Norwegian Directorate for Higher Education and Skills \(HK-dir\)](#), please attach this as well.

Joint work will be considered. If it is difficult to identify your contribution to joint work, you must attach a brief description of your participation.

When assessing the best qualified, we emphasize necessary qualifications such as education, experience and personal suitability. Motivation for the position, ambitions, and potential for research will also count when assessing 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).

General information

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.

If you think this position looks interesting and in line with your qualifications, you are welcome to apply.

Questions about the position can be directed to [Associate Professor Pedro Crespo del Granado](#), [Professor Mette Bjørndal](#), or [Senior Researcher Mostafa Barani](#).

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

Application deadline: 02.11.2025

For practical information about [working at NTNU](#), follow this link.

[The city of Trondheim](#) is a modern European city with a rich cultural scene. [Trondheim is the tech 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.

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)