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Two happy students who just finished their exams. Vemund Mørk and fellow student Nelly Thoithi, University of Cape Town, South Africa.

Photo: Øyvind Huse
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Knowledge for a better world

NTNU’s vision is *Knowledge for a better world*. The university puts this vision into practice by actively contributing to develop the knowledge and expertise the global community needs. To do this, the university must have a strong and clear international orientation and place all its activities in an international context.

NTNU’s International Action Plan explains how NTNU will implement its vision and strategy internationally, by detailing specific ambitions and priorities.

For education and the learning environment, internationalization will contribute to the education of outstanding graduates, boost the quality of education and develop an excellent learning environment.

For research, international collaboration will be a tool to develop talented researchers and excellent research environments, to improve the overall quality of research, within and across disciplines. For artistic activities, international collaboration will help build outstanding artistic communities and strengthen both artistic development and the interaction of the arts with technology, science and society.

For innovation, internationalization will support collaboration with established businesses and the public sector, and will help to create new industry and commerce.

In dissemination and outreach, international communication and research dissemination will increase awareness of NTNU and help to profile NTNU as an attractive collaborative partner.

One of the strategy’s overarching goals is for all NTNU’s departments to have academic groups that are at a documented international level in at least one of their core areas. In addition, NTNU is committed to focusing efforts and resources on the UN’s Sustainable Development Goals. International collaboration is a means of achieving these goals.
The strategy contains four priority goals for development:

- take better advantage of the EU’s funding for research, innovation and education to ensure high quality and relevance in our activities.
- establish strategic partnerships with selected institutions worldwide.
- strengthen international recruitment of outstanding researchers and increase the international mobility of our employees.
- increase the proportion of degree students who spend a study period at an educational institution abroad.

The aim of the International Action Plan 2018–2021 is for NTNU to significantly strengthen its international participation in and contribution to knowledge development. The action plan emphasizes the need for a clearer international orientation in all academic groups, encourages international research careers for academic staff and the facilitation of international educational pathways for students.

The motivation behind this Action Plan is the understanding that international collaboration contributes to the quality of our academic activities and increases scientific and social impact. Another reason, is that we need to work across national borders to tackle the global challenges facing our planet and develop research-based solutions.

Through international collaboration, NTNU and its partners in Europe and the rest of the world help push the boundaries of knowledge. This is also important for Norwegian competitiveness, adaptability and resilience. Through collaboration, public- and private-sector actors will have access to the best knowledge that is available internationally.

The implementation of the International Action Plan 2018–2021 requires all NTNU’s departments to increase their awareness and develop a culture of internationalization. The knowledge system is global, and so is the competition for resources. NTNU must therefore have departments and academic groups with a clear international profile that can make their mark in global competition.
INTERNATIONALIZATION OF EDUCATION

INTERNATIONAL MOBILITY FOR NTNU’S STUDENTS

INTERNATIONALIZATION OF NTNU’S STUDY PROGRAMMES
1. Internationalization of education

1.1 International mobility for NTNU’s students

Under the auspices of the Bologna Process, Norway is committed to ensuring that 20% of students who complete a degree at a Norwegian educational institution will study abroad for a period by 2020. The longer-term goal is 50%.

Under the national Regulations on the Supervision of Educational Quality [studietilsynsforskriften], institutions must ensure that students in all degree programmes are offered international student exchanges through relevant, up-to-date, binding and quality assured agreements. The Regulations require NTNU’s study programmes to have internationalization arrangements adapted to the programme’s level, scope and other characteristics.

International mobility aims to provide quality education, language proficiency, international experience and intercultural skills as well as to prepare students for a global job market.

NTNU will increase international student mobility. There should be a reasonable equivalence between the number of incoming exchange students at NTNU and the number of outgoing students from NTNU.

GOALS

At least 40% of NTNU’s master’s degree students and 20% of bachelor’s degree students should study at an educational institution abroad for a period of at least one semester.

NTNU should increase the number of bachelor’s degree students who have short-term study abroad periods.
1.2 Internationalization of NTNU’s study programmes

The content and approach of the study programmes offered at NTNU are crucial for the internationalization of education at the university. Ensuring that offers and programmes are appropriate for international students and teaching staff is an important component in internationalizing education at NTNU.

GOALS

NTNU’s study programmes should facilitate international recruitment.

NTNU’s study programmes should be tailored to an international job market.
**ACTIONS**

- NTNU should develop a portfolio of international master’s programmes of high quality and strengthen efforts aimed at recruitment to and promotion of the programmes.

- Teaching at the master’s level at NTNU should generally be in English.

- NTNU’s study programmes should develop learning outcomes that provide students with international competence.

- NTNU should develop good models and procedures for collaboration with international partners in programmes and degrees.
INTERNATIONALIZATION OF RESEARCH CAREERS

INTERNATIONAL MOBILITY FOR NTNU ACADEMIC STAFF
INTERNATIONAL DOCTORAL AND POSTDOCTORAL PERIODS
INTERNATIONAL RECRUITMENT AND CAREER DEVELOPMENT
INTERNATIONAL VISITING SCHOLARS
2. Internationalization of research careers

2.1 International mobility for NTNU academic staff

Active participation in an international community of peers is an important part of an academic career. International mobility is one way to develop professional collaboration with academic merit. International research visits via sabbaticals are an effective tool for this. In 2016, NTNU introduced common guidelines for sabbaticals, emphasizing longer international research visits. The International Action Plan 2018–2021 stresses the development of flexible schemes for international researcher mobility.

GOALS

All NTNU academic staff should be active participants in the international academic community and participate in a variety of international arenas.

ACTIONS

• NTNU should develop flexible schemes for short- and medium-term international mobility for academic staff.

• Internationalization activities should be an explicit aspect of employee development and appraisal interviews for all academic staff.

2.2 International doctoral and postdoctoral periods

Inclusion in the international academic community at an early stage of one’s career is important for quality, visibility and collaboration. PhD candidates and postdoctoral fellows should therefore be brought into the international research community as early as possible. This participation can take place in different ways: through conferences, active involvement in networks, research visits, joint publications and participation in international projects.
**GOALS**

All NTNU PhD candidates and postdoctoral fellows should be part of an international research community.

NTNU should offer attractive international doctoral and postdoctoral programmes that ensure participation in the international research community.

**ACTIONS**

- NTNU should facilitate international research visits for PhD candidates and postdoctoral fellows, especially for those without previous international experience.

- The PhD programmes should ensure that each PhD candidate has a plan for internationalization.

- NTNU should collaborate with selected international partners on the education of doctoral degree candidates.

2.3 International recruitment and career development

Recruitment of highly qualified academic staff to NTNU from abroad enhances the quality of the university’s academic activities. These employees contribute to the development of international networks, international collaboration and innovation in scientific approaches and methods.

International recruitment of academic staff to NTNU requires systematic effort over time. Excellent academic communities, access to research infrastructure, flexible recruitment processes, as well as visibility and trustworthiness as a good workplace are important success factors. The HR Excellence in Research award from the EU Commission to NTNU is a clear acknowledgement of this.

The university will need to further develop its recruitment processes, the way it welcomes and integrates international employees, and the career opportunities that it offers to attract and retain excellent academic staff from abroad.
GOALS

NTNU should be an attractive employer for international researchers.

NTNU’s reception of international employees should follow best practices.

ACTIONS

• NTNU should develop good models and procedures for international recruitment.

• International experience should be emphasized when hiring for tenured academic positions.

• NTNU gives internationally recruited employees a helpful introduction to Norwegian working life. The university offers international researchers and their families a central reception office with first-line functions.
2.4 International visiting scholars

Every year, NTNU welcomes a large number of international visiting scholars for shorter- and longer-term stays. Visiting scholars bring valuable perspectives and networks with them.

There are benefits to increasing the number of international visiting scholars. There are also potential benefits to institutionalizing processes and frameworks for international guest researchers to ensure quality, professionalism and satisfying periods of research for scholars who visit NTNU, as well as streamlined and predictable processes for the hosts.

GOALS

NTNU’s academic communities should recruit strong international visiting scholars for short- or longer-term visits.

ACTIONS

• NTNU should develop good academic and practical arrangements for international visiting scholars where the host’s functions are clearly defined.

• As part of the campus development project, NTNU should consider suitable accommodation facilities for international visiting scholars.
INTERNATIONAL ALLIANCES AND PARTNERSHIPS

COLLABORATION WITH OUTSTANDING INTERNATIONAL INSTITUTIONS AND ACADEMIC GROUPS

COLLABORATION WITH INSTITUTIONS IN LOW- AND MIDDLE-INCOME COUNTRIES

COLLABORATION WITH INTERNATIONAL ALUMNI
3. International alliances and partnerships

3.1 Collaboration with outstanding international institutions and academic groups

NTNU’s academic staff have a broad international network of contacts and significant international engagement with participation in multi-faceted international arenas. This is the foundation of NTNU’s international collaboration.

Participation in international alliances and bilateral strategic partnerships can improve the quality, relevance and visibility of international collaboration.

GOALS

NTNU should be an active participant and contributor in influential international alliances and should develop strategic partnerships with selected institutions and academic communities.

The proportion of NTNU’s publications with co-authors from institutions in other countries should be at a leading level among Norwegian universities.

ACTIONS

• NTNU’s research groups should identify the most important international academic communities within their own area of expertise and develop partnerships with high-priority groups.

• NTNU should give priority to collaboration with selected institutions in both Europe and the rest of the world.

• NTNU should develop collaboration with international players in the business community and the working world.

• NTNU should develop long-term collaboration with international research infrastructures.
• NTNU should develop collaboration with Nordic institutions and contribute to the development of Nordic Five Tech as a key international player.

• NTNU should establish a comprehensive and coherent plan for international research dissemination and promotion.

3.2 Collaboration with low- and middle-income countries

NTNU has a long tradition of working with low- and middle-income countries. This includes education, research, innovation and capacity building, and contributes to academic knowledge, mutual creation of value and creating awareness of a shared need to address global challenges.

NTNU wants to strengthen its institutional foundation for collaboration with institutions in low- and middle-income countries to increase relevance and interdisciplinarity. Collaboration underscores NTNU’s ambitions for knowledge for a better world and contributes to the UN’s Sustainable Development Goals.

GOALS

NTNU should strengthen its collaboration with institutions in low- and middle-income countries. This collaboration should be based on reciprocity, interdisciplinarity, sustainability and a long-term perspective.

ACTIONS

• The faculties should identify institutions and clusters of institutions in low- and middle-income countries with which strategic partnerships can be developed.

• NTNU should establish arenas to strengthen and coordinate collaboration with low- and middle-income countries.

• NTNU should establish measures to support interdisciplinary cooperation with low- and middle-income countries, in dialogue with Norad, the Research Council of Norway, the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education, and other relevant national and international players.
3.3 Collaboration with international alumni

Through their work, NTNU’s graduates fulfil important tasks for society. Many alumni have key roles in international work and community life, in research and education and in public administration.

Collaboration with alumni represents a competitive advantage for the university that can be effectively leveraged. Closer collaboration can contribute to a more socially relevant university and can create opportunities for collaboration and contributions in the international job market for NTNU’s academic groups.

**GOALS**

NTNU should be an attractive partner for alumni and should use the alumni network to open doors to collaboration with the working world and to showcase and promote NTNU internationally.

**ACTIONS**

- NTNU should establish alumni networks in priority partner countries and develop cross-sectoral arenas for interaction.

- NTNU should work together with alumni to give NTNU students international work experience and use the alumni networks to recruit students to the international master’s degree programmes.
PARTICIPATION IN THE EUROPEAN EDUCATION, RESEARCH AND INNOVATION PROGRAMMES

THE EUROPEAN EDUCATION PROGRAMME ERASMUS+

THE EUROPEAN FRAMEWORK PROGRAMMES FOR RESEARCH AND INNOVATION, HORIZON 2020 AND HORIZON EUROPE

EUROPEAN RESEARCH COUNCIL
4. Participation in the European education, research and innovation programmes

4.1 The European education programme Erasmus+

Norway has high aspirations for participation in the European education programme Erasmus+. The programme is an important source of funding for individual student exchanges in Europe. In addition, the programme supports project collaboration between European institutions in higher education.

The mobility element of Erasmus+ is an important instrument to increase international mobility for NTNU students, and the project element creates collaborative opportunities with European educational institutions that in turn can fuel improvements and innovation in the programmes offered.

GOALS

Participation in Erasmus+ should help ensure that NTNU offers relevant study programmes of high quality and encourage increased student mobility for NTNU students.

NTNU should be among the five Nordic universities that makes the greatest use of the funding programmes for European cooperation in education in Erasmus+.

NTNU should be among the five Nordic educational institutions that has the most students on exchange through Erasmus+.

ACTIONS

• NTNU should strengthen its internal efforts to participate in the mobility aspects of Erasmus+.

• NTNU should further develop support services and consider incentive schemes for participation in Erasmus+.

• Processes should be set up to ensure effective preparation for the next European framework programme for education.
4.2 The European framework programmes for research and innovation, Horizon 2020 and Horizon Europe

Participation in the European framework programmes for research and innovation is a priority for Norway. NTNU is expected to make a significant contribution to achieving national goals.

For NTNU, participation in Horizon 2020 creates opportunities for cooperation on key issues with leading European and international research and innovation groups. The programme offers an international competitive arena for the academic communities. The university’s participation in these funding programmes offers an international showcase for NTNU’s capacity and quality in research and innovation.

The EU’s ninth framework programme, Horizon Europe, is under development. It is important that NTNU is well prepared for the transition to a new framework programme and takes advantage of the opportunities for influence that are available.

**GOALS**

NTNU’s participation in the European framework programme for research and innovation Horizon 2020 should be equivalent to income from the programme of at least NOK 1 billion for the programme period.

NTNU should be among the three best Nordic universities in the thematic programmes under Horizon 2020.

**ACTIONS**

- NTNU’s existing incentive and support schemes for Horizon 2020 should be continued, including the NTNU Brussels office. Organization of EU-funded projects should be considered with a focus on better follow-up in the project phase.
• NTNU departments, centres for research-based innovation and centres for environment-friendly energy research should develop specific goals and plans for participation in the European framework programmes for research and innovation. NTNU’s strategic research areas and enabling research technologies should identify the most influential European networks within their areas of responsibility and mobilize NTNU’s research communities for participation.

• NTNU faculties should work for an increase in the number of academic employees who are registered as evaluators for the European research and innovation programmes.

• NTNU’s participation in the European Institute of Innovation and Technology Knowledge and Innovation Communities (KICs) should be evaluated.

• Processes should be set up to ensure effective preparation for Horizon Europe.

• NTNU should actively use leading European communications platforms for dissemination of research.

NTNU Professor Annemie Wyckmans during the launch of the Horizont 2020 project Urban-EU-China, one of several European projects Wyckmans is in the leadership of.

Photo: Tone Wote Astdadheim
4.3 European Research Council

European Research Council (ERC) Grants are the most prestigious basic research grants awarded in Europe and reflect research activity at a high international level. European universities are compared based on the number of ERC grants they are awarded. For NTNU to be regarded as a strong research university, it is very important to increase the number of ERC grants.

ERC grants create opportunities for long-term basic research that is a cornerstone in developing research and the scientific disciplines.

GOALS

NTNU should at least double its portfolio of ERC grants in Horizon 2020 in relation to the EU’s Seventh Framework Programme.

ACTIONS

- NTNU faculties should develop both annual and long-term plans for ERC applications.
- NTNU should prepare annual target figures for the number of ERC applications that reach stage 2 in the evaluations.
- NTNU Research Excellence should be continued to improve the quality and volume of ERC applications. It is expected that NTNU researchers who receive funding for outstanding research from the Research Council of Norway will apply for ERC grants. NTNU’s Centres of Excellence and Research Excellence projects should create plans to further develop ERC applications.
- NTNU can offer one extra year for Marie Skłodowska Curie Incoming Fellows provided that, during the additional year, the researcher applies for an ERC grant with NTNU as the host institution. NTNU will make arrangements enabling Marie Skłodowska Curie Global Fellows with a background from NTNU to apply for ERC grants with NTNU as the host institution.
May-Britt Tessem has received a starting grant from the European Research Council. Her research uses integrated multiomics technology to study tissue samples and biofluids from large-scale biobanks from prostate cancer patients.

Photo: Geir Otto Johansen/St. Olavs hospital