



**NTNU – Trondheim**  
Norwegian University of  
Science and Technology

# Strategy

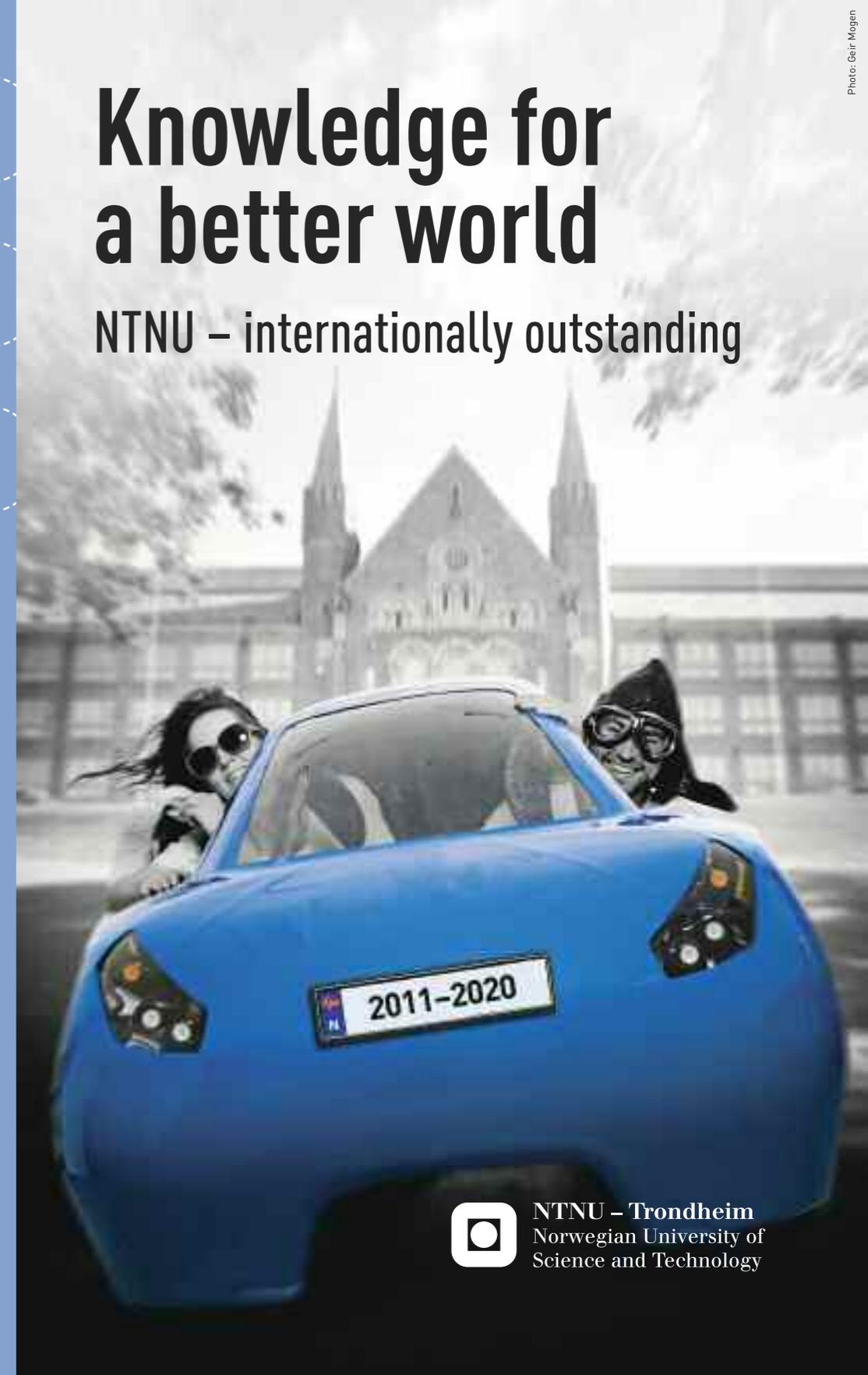
Strategy 2011–2020 for the Norwegian University of Science and Technology – NTNU

Approved by the Board of NTNU on 30 March 2011



# Knowledge for a better world

NTNU – internationally outstanding



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# Contents

Vision: Knowledge for a better world	5
Mission in society	8
Overarching objectives and choices of direction	12
Research and artistic activities	14
Education and learning environment	16
Innovation	18
Dissemination and communication	20
Leadership, participation and resources	22

**Front page:** Students from NTNU have participated for four consecutive years (2008-2011) in the Shell Eco Marathon, the world's largest environmental car race. The aim is to build ultra-economical vehicles and see how far they can travel using the equivalent of one litre of petrol. In 2009, NTNU was top of its class and set the world record by driving 1246 km. In this year's competition, NTNU's car was second. Not bad when it competed with 212 teams from 27 countries. The photo shows the car that was built by NTNU students in 2010.

Illustration/Photo: Geir Mogen/NTNU Info

# Vision: Knowledge for a better world

NTNU aims to create the basis for the development of knowledge and to create value – economic, cultural and social. We will make the best possible use of our main profile in science and technology, our academic breadth, and our interdisciplinary expertise to tackle the large and complex challenges faced by Norway and the world community.

NTNU's distinctive character as a university is a strength. Our objective is to be internationally outstanding. Our research and education are to be highly regarded in international academic evaluations. In selected areas, we aim to have academic environments that rank among the best in the world. NTNU is to be a sought-after collaborative partner for leading knowledge communities and enterprises nationally and internationally. We aim to offer an attractive range of education programmes that enrich students' growth as humans and contribute to the development of democratic and responsible citizens. Our graduates will be in demand in the labour market because they have a relevant education of high quality.

NTNU aims to have a modern research infrastructure as well as a learning and working environment that attracts the most talented students and staff. Trondheim is to have a reputation as the country's best city for education.

TYIN tegnestue is a non-profit organization working humanitarian through architecture. It is run by two former students from NTNU and aims at improving the lives of people in difficult situations. TYIN has worked in poor and underdeveloped areas in Thailand, Burma, Haiti, Uganda and Sumatra. Their projects include orphanages, playgrounds, libraries and bath houses – all built of local materials and in cooperation with the local population.



# Values

## **CREATIVE**

We will dare to tackle the most challenging questions in science and to seek innovative solutions. We will educate people who are able to meet the national and global challenges of tomorrow. We will value and encourage innovative teaching, research and artistic activities.

## **CONSTRUCTIVE**

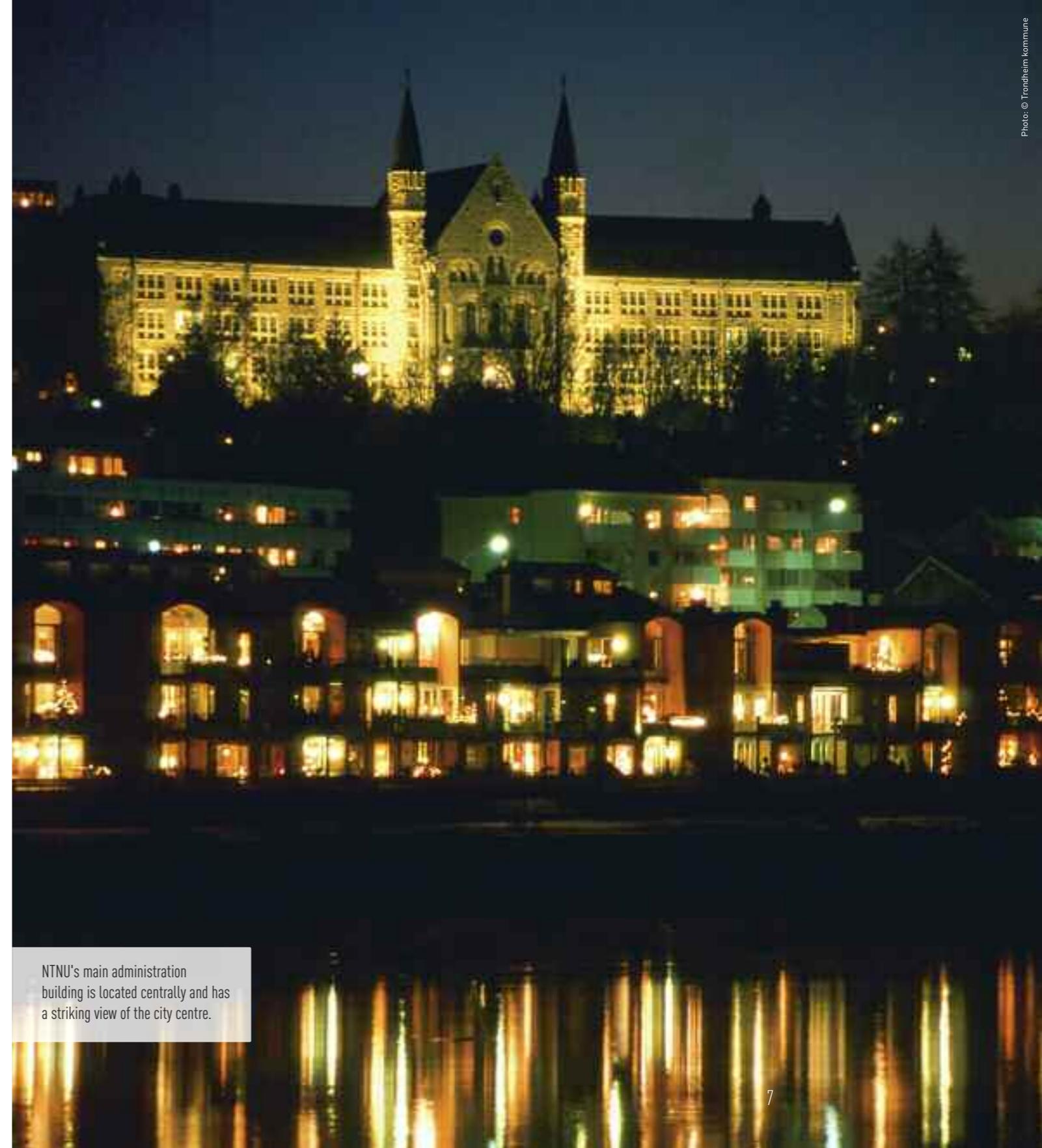
We will maintain an open and constructive dialogue within the university and with the world around us. We will take social responsibility and influence the development of society through up-to-date and relevant education, research, artistic activities and dissemination.

## **CRITICAL**

We will build on fundamental democratic values and represent an unprejudiced and independent voice. We will challenge conventional ideas and solutions, seek new knowledge, and pursue our work in accordance with ethical standards.

## **RESPECTFUL AND CONSIDERATE**

We will show respect for different academic traditions and disciplines. We will promote equality and require tolerance across the boundaries of philosophy of life, culture and gender. We will contribute to diversity and equality of opportunity in working life and in our own activities. NTNU will be a sought-after workplace for students and staff. The environment for work and learning will reflect respect and thoughtfulness. Together we will lay the foundation for personal growth and development of skills.



NTNU's main administration building is located centrally and has a striking view of the city centre.

# Mission in society

Our mission in society encompasses the expectations placed on NTNU by the nation as well as the world community, and the challenges in society that the university wishes to address. This is a governing principle for our activities.

## OUR GENERAL MISSION

As a university, NTNU has a particular responsibility for long-term basic research and academic development. We aim to offer research-based education at all levels, emphasizing postgraduate studies and doctoral degrees. We will disseminate knowledge and manage expertise in nature, culture, society and technology. NTNU will be a bearer of culture and will contribute to innovation in society, industry, and public-sector activities.

## OUR SPECIFIC MISSION

Our main profile in science and technology gives us a particular responsibility to develop the technological foundation for the society of the future. Programmes of professional study at master's degree level are a strong point at NTNU.

We will also work in the interfaces between technology, natural science, medicine, architecture, the humanities and social science. NTNU has a responsibility to offer university education in art and to undertake artistic development work.

We will use our academic breadth and interdisciplinary expertise to solve complex problems and increase understanding of the relationships between technology, society and environment. We will take advantage of our unique qualifications to promote innovation and develop the knowledge base for sustainable value creation and a competitive business sector.

## OUR MISSION IN RELATION TO DEMOCRACY AND SOLIDARITY

It is the university's mission to participate in a knowledge-based public debate about important issues in society. We will use our knowledge to benefit society, and contribute to competence development in developing countries. We will engage in solving global challenges in health and welfare, energy and climate, the environment and use of resources. Our activities will promote human rights and intercultural dialogue.



Edvard and May-Britt Moser are the research team behind the Centre for the Biology of Memory (CMB), which has won international recognition for its discovery of how the brain establishes a sense of place.



The aurora borealis offers evening inspiration at Gløshaugen campus.

# Overarching objectives and choices of direction

## INTERNATIONALLY OUTSTANDING

NTNU aims to become an outstanding university by international standards. This requires us to have world-class academic environments ourselves, and to seek collaboration with other leading knowledge communities in the world. In areas that are key to our mission in society, NTNU will take responsibility for building outstanding environments. We must set priorities for our resources so that we can provide development opportunities for the best teachers, researchers and academic groups, regardless of area.

Our academic environments must concentrate their activities in order to create robust groups with quality at an international level. They must create adequate scope for the long-term basic research and take advantage of the opportunities that interdisciplinary collaboration provides to create unique results within their own subject. The academic environments must continue their close collaboration with the private and public sectors to develop the expertise that society needs.

Motivated employees and students are a prerequisite to enable NTNU to achieve its objectives. Each individual has an independent responsibility to contribute to a fertile and favourable environment for work and learning, and to NTNU's efforts to fulfil its mission in society.

The drive to understand how ships and other ocean structures behave in the open ocean is at the heart of the interdisciplinary research at the Centre for Ships and Ocean Structures (CeSOS). The centre's scientists make use of both theoretical and experimental methods, and not least of the world-class facilities at the Marine Technology laboratories.



Photo: Thor Nielsen

## OBJECTIVES

- The entire organization upholds quality at a high international level and several academic environments are in the top international league, measured by international peer review.
- NTNU has first-class laboratories and infrastructure for research and education.
- Our main profile and unique attributes provide an advantage in academic competition at the national and international level, and in collaboration with private- and public-sector organizations.
- We attract the best students and staff, and are internationally renowned for the quality of our student life.
- Students and staff members feel that they belong to NTNU and are proud of their affiliation.

## CHOICES OF DIRECTION

- We will give priority to long-term basic research and enabling technologies, and create a sound infrastructure for these.
- We will give priority to research-based education for the working life of the future, and be a driving force in sustainable innovation.
- Through priority setting and concentration of disciplines, we will create robust academic environments of high quality that have a distinctive profile.
- We will create scope and mechanisms to develop academic environments that rank in the top international league and to strengthen interdisciplinarity.
- We will place greater emphasis on collaboration with leading centres of expertise in and outside Norway, and build on the strategic alliance with SINTEF and St. Olav's Hospital.
- We will give priority to the environment for work and learning, and we will consolidate Trondheim's position as a leading student city.

# Research and artistic activities

The development of society depends on cultural renewal and research-based knowledge. An objective of research is to provide insight into technology, society and culture. Research must help to solve relevant problems and empower us to face the challenges of the future. Complex problems can be solved only with in-depth disciplinary knowledge and interdisciplinary collaboration. There must be a balance and interaction between applied and long-term basic research.

NTNU's research and artistic activities are part of the international academic community, and all our academic environments have a responsibility to contribute actively to the development of subject areas and disciplines. As a knowledge nation, Norway must keep pace with international research, and as a large university we must aspire to leave a lasting impression.

Internationalization is a prerequisite for development of high quality. Visibility at the national and international level makes us attractive for collaboration with the best players. This requires robust academic environments with a distinct profile, clear priorities, and disciplinary concentration. The environments must identify tomorrow's outstanding researchers and artists, and motivate students to pursue research. The doctoral programmes are a key instrument for renewing research and strengthening society's knowledge base.



NTNU's music education programmes are regarded as the best in Norway. Both bands and individual musicians from NTNU's Jazz Performance Programme have garnered international attention.

## OBJECTIVES

- All research and artistic activities uphold a high international level, and several scientific and artistic environments are in the top international league.
- The research environments have a distinct profile that supports education and innovation, and that takes advantage of interdisciplinary links.
- The research is long-term and fundamental. It contributes to international development of knowledge and creates the basis for future innovation.
- NTNU's doctoral programmes are in demand and maintain a high international standard.

## CHOICES OF DIRECTION

- We will give priority to internationalization and develop expertise in initiating, participating in and leading international research projects.
- We will identify and develop talents in research and art, and establish mechanisms to maintain and develop academic environments in the top international league.
- We will concentrate our research through robust academic environments of high quality and with a clear academic profile.
- We will strengthen the fundamental, long-term research and enabling technologies such as ICT, biotechnology and nanotechnology.
- We will work to ensure that the public and private sectors seek and value doctoral graduates.

# Education and learning environment

There is a growing need for people with expertise who can tackle complex challenges in society. Competition for students is intensifying in the global education market; flexibility and ability to change are important. If we are to attract the most talented students and teaching staff, NTNU must take advantage of its unique attributes and develop a clear, ambitious profile for our academic portfolio. Studies must take place in a rich and inclusive learning environment. They must build on sound research and stimulate critical reflection and innovation.

Alliances with strong academic environments at the national and international level create attractive programmes of study, increase the quality of the education and strengthen student mobility. Close dialogue with private- and public-sector organizations is needed to develop programmes of study that are relevant to society and to prepare students for the labour market they face both during and after their studies. The requirements for skills are changing continuously. This requires adapted learning activities and lifelong learning.

Students must take responsibility for their own learning and be involved in the development of education programmes, teaching, and the learning environment. NTNU must provide students with close follow-up and evaluations that enhance learning. Leaders of education, teaching, and the learning environment must have clear roles and clear responsibility. The culture of quality improvement in the academic environments must be developed further, and the quality of education must be followed up continuously.



Photo: Arild Juu/NTNU SA

## OBJECTIVES

- NTNU's graduates have relevant and recognized expertise. They are in demand nationally and internationally.
- All the programmes of study are characterized by academic and teaching quality at a high international level.
- The teaching stimulates students' critical reflection, and promotes interest in research and innovation.
- NTNU has motivated students who are recruited nationally and internationally, and who can work across disciplinary boundaries and learning cultures.

## CHOICES OF DIRECTION

- The studies will provide clear and documented qualifications for national and international working life.
- The academic environments will concentrate the portfolio of studies to strengthen quality and give higher priority to international collaboration.
- We will offer teaching that has close links to research and innovation and that stimulates interdisciplinarity.
- We will increase students' involvement in improvement of education quality and create a varied and favourable learning environment.
- All academic environments will develop first-class educational management and a culture of quality improvement using systematic evaluation and effective follow-up.
- We will increase the scope and quality of continuing and further education.

# Innovation

NTNU has helped to build the Norway of today. Our ambition is to be an even more important contributor to sustainable value creation in the future. We must stimulate increased innovation throughout the breadth of NTNU's subject areas. This is to be clearly reflected in the education that we offer. Our interdisciplinary profile and experience in collaboration with society and business provide NTNU with a competitive advantage in innovation.

Our innovation activities arise from education, research and artistic work. The entire process from ideas to new products and services must function optimally, and capacity for the education of entrepreneurs must increase. In cooperation with other players, NTNU must establish the basis for more spin-off companies and development in existing enterprises.

Effective innovation requires closer, stronger and more professionalized collaboration with the private and public sectors. A broad base of research forms the foundation for ideas that are useful to society and have potential for commercialization. We must strengthen interdisciplinary research on innovation processes, and encourage innovation among students and staff.



## OBJECTIVES

- NTNU is a driving force for adaptation and sustainable innovation in society.
- NTNU is internationally outstanding within research-based innovation and collaboration with the private and public sectors.
- Students and staff throughout NTNU's academic breadth participate in entrepreneurship and innovation.
- NTNU has a well-functioning internal system for innovation, from ideas to spin-off companies.

## CHOICES OF DIRECTION

- We will professionalize and develop external relationships internationally, nationally and regionally.
- We will increase our research commitment to processes related to innovation and entrepreneurship.
- Innovation activities at NTNU will emphasize interdisciplinarity and collaboration with business and society.
- We will offer infrastructure and professional support functions for staff, students and spin-off companies.

# Dissemination and communication

The universities must contribute to a knowledge-based public debate, convey insight, and provide the public with an understanding of the relevance of research.

NTNU wishes to stimulate sound development of society through dissemination of knowledge and expertise. Our dissemination and communication will encompass knowledge, collections, art and culture. We take a specific responsibility for science and technology. Dissemination must reflect the constantly changing landscape of knowledge.

Dissemination of research outputs to the public must take place in an open dialogue with society. Feedback from the outside world must have an impact on both research and education, thus increasing the relevance of our activities. The dissemination of research competes for attention in the information society. NTNU must develop and apply innovative approaches and media.

Effective dissemination and communication strengthen the institution's reputation. This can help to recruit talented staff and students, and make us an attractive partner for business and knowledge institutions.



## OBJECTIVES

- Dissemination of knowledge is an integral part of NTNU's activities, and our students and staff are active contributors to public debate.
- NTNU assists decision-makers nationally and internationally by providing research-based expertise.
- We achieve effective dissemination of our results in research, education and innovation, and generate interest in science and technology.
- NTNU is visible and has a strong reputation nationally and internationally.

## CHOICES OF DIRECTION

- We will establish and participate in strategic forums for contact with society.
- We will take a specific responsibility for increasing society's knowledge of science and technology.
- We will promote our academic environments in the arts more strongly in our dissemination and communication.
- We will secure scientific collections and make them more accessible.
- We will strengthen international dissemination and communication.
- We will increase our endeavours to create a uniting NTNU identity among students, staff, and alumni.

# Leadership, participation and resources

Organization and resources must support our core activities. Better services, readily available information and good support systems contribute to this. NTNU must be responsible for an environmentally responsible operation.

The operating context changes rapidly, and this imposes stringent requirements for good leadership and for the organization's adaptability. Leaders must make demanding strategic choices to develop our activities and establish the basis for an open, accepting and safe working environment. They have a specific responsibility to strengthen work on health, safety and the environment (HSE) at their units.

An internationally outstanding university depends on the active involvement of students and staff. This requires inclusive leadership and effective collaboration with the student democracy and the employees' organizations.

One of NTNU's great challenges is to recruit highly talented and motivated people to scientific and technical-administrative positions. In priority areas, we must seek staff members with expertise from internationally leading academic environments, and have suitable mechanisms for this. NTNU has a particular challenge in recruiting more women to technology and science.



Campus Dragvoll.

## OBJECTIVES

- NTNU has leaders with the ability to set goals, generate enthusiasm and promote academic development.
- NTNU has an open, accepting and safe working environment with broad participation from students and staff.
- NTNU is a university with operations that are consistently environmentally responsible.
- The organization has a high level of competence and sound resource management at all levels.
- NTNU has effective support functions and information systems adapted to its primary responsibilities and the students' learning.

## CHOICES OF DIRECTION

- We will develop the leadership role and improve the skills of NTNU's leaders.
- We will pursue an active human resources policy that contributes to good work and learning environments, emphasizing recruitment, development of staff and equal opportunity.
- We will strengthen the systematic health, safety and environment (HSE) work among students and staff.
- We will take greater responsibility for the external environment.
- We will create greater scope for strategic priority setting at all levels.