Annual Report 2014

NTNU
Vitenskapsmuseet

VISION

NTNU - Knowledge for a better world

The NTNU University Museum embraces the world!

FRONT PAGE: The gold ring from Rimol in Melhus, Trondheim: A unique find that dates from the Early Roman Iron Age (200 BC - 400 AC). The ring was discovered and handed in 2014 by an amateur using a metal detector.

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Welcomed by the sea – the story behind the taste

HIGHLIGHTS OF 2014

- A considerable number of environmental and climate research projects gained grants by the Research Council of Norway
- A consensus on the new structure of the archaeology degree programme was reached. This will form the foundation of a more prominent employment profile and a greater influx of students.
- NTNU University Museum was the first Norwegian university to adopt a national data collection infrastructure for botanical data
- The Museum's staff demonstrated their skills in risk management when safeguarding the large ecclesiastical art collection against vibrations from neighbouring building construction
- The Ministry of Education and Research confirmed the Department of Archaeometry's new title *The National Laboratories of Age Determination*
- 1067 students and teachers participated in the school programme *Welcomed by the sea – the story behind the taste*
- NTNU University Museum participated in the Bicentenary Celebration of the Constitution of Norway through its exhibition: *A game between superpowers – Trondheim 1814*
- The Museum's Department of Archaeology and Cultural History launched a new research strategy: Humans, Materialism and Application 2014 – 2019
- Professor Emeritus Asbjørn Moen was knighted by The Royal Norwegian Order of St. Olav
- The Museum launched the massive open online course (MOOC) Diversification in Time and Space. The course epitomizes a new innovative form of education

The NTNU University Museum embraces NTNU

«In line with education, research, and innovation, public outreach is a central component of NTNU's duty. This reinforces the need for further development of the NTNU University Museum and other fields of public outreach.»

Written by NTNU's rector Gunnar Bovim to the NTNU Board in June.

I have been playing around with the visions of NTNU and the NTNU University Museum and how to best combine them: "NTNU - Knowledge for a better world", and "The NTNU University Museum embraces the world". Together they become "The NTNU University Museum embraces NTNU".

For me, this gives a direction for the Museum's endeavours. Our competence and infrastructure at the Museum can contribute to profiling NTNU's enterprises. Our foundation that consists of our collections and our research gives us fantastic opportunities to tell the extensive narrative about the natural environment and culture of Norway.

This year's annual report follows the structure of the NTNU University Museum's Strategic Plan 2011-2016, which we revised in 2014. In the revision we reiterated Kalvskinnet as a prominent area in the city and a front for NTNU in 2016. To display NTNU's strategic initiatives we have allocated areas for future exhibitions, the first of which will open in 2015.

The greatest obstacle to achieve our strategy is a lack of appropriate premises. There is an urgent need for new storage facilities for our scientific collections. A demanding audience expects exhibitions at a level which we are currently unable to provide. In spite of campus reviews and discussions, the initiation of the Kalvskinnet Knowledge Centre building project still remains on the drawing board in 2014.

Thus, for me, one of our main tasks is to continue to push to realise the Kalvskinnet Knowledge Centre.

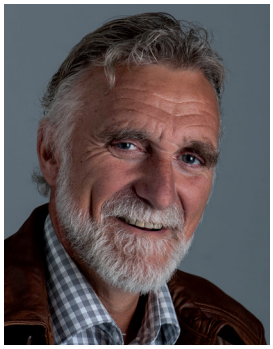
Only then can we truly embrace both the world – and NTNU.

Reidar Andersen, Museum Director

Museum Board 2014

Chairman **Peter Johan Schei** (External Representative)
Berit Rian (External Representative)
Siri Hunnes Blakstad (External Representative)
Harald Jacobsen (External Representative)
Eva Lindgaard
(Representative of Technical-Administrative Staff)
Elisabeth Stur
(Representative of Temporary Scientific Staff)
Per Gustav Thingstad (Representative of Scientific Staff)
Torbjørn Ekrem (Representative of Scientific Staff)
Vibekke Vange (Representative of Scientific Staff)
Caroline Fredriksen (Student Representative)
Sindre Eldøy (Student Representative)

Museum Management 2014



Reidar Andersen
Museum Director

Solveig Bakken
Research and Collections Manager

Ivar Margido Jensås
Head of Administration

Eiliv Larsen
Head of the National Laboratories of Age Determination

Birgitte Skar
Head of the Department of Archaeology and Cultural History

Morten Sylvester
Acting Head of the Department of Public Outreach and Exhibitions

Torkild Bakken
Head of the Department of Natural History

Tove Eivindsen
Head of Communication

AN ORGANISATIONAL OVERVIEW

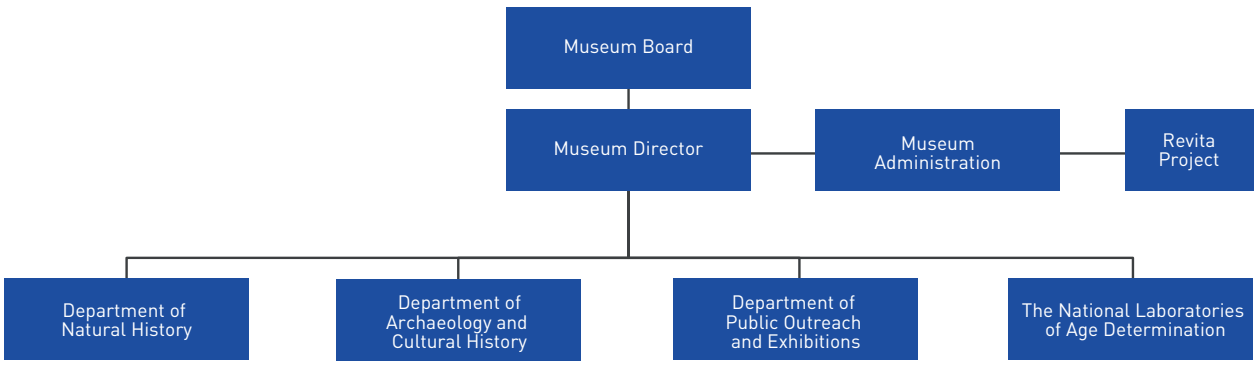
The NTNU University Museum is one of six university museums in Norway and forms part of the Norwegian University of Science and Technology, abbreviated as NTNU. The NTNU University Museum is one of the faculties at the University.

The Museum is located at Kalvskinnet in the centre of Trondheim, along with its exhibitions, collections, administration and three of its departments. The National Laboratories for Age Determination is located at the Gløshaugen campus of NTNU. Ringve Botanical Gardens can be found at Lade, Trondheim, and the Kongsvoll Alpine Garden is at Kongsvoll, at Dovrefjell.

OUR MISSION

The NTNU University Museum is to develop and share knowledge about the natural environment and culture, and is to safeguard and preserve its scientific collections, making them available for research, curation and outreach activities.

ORGANIZATIONAL STRUCTURE



Pr. March 5 2015

DEPARTMENTS

THE NATIONAL LABORATORIES OF AGE DETERMINATION (SA)

The National Laboratories of Age Determination dates archaeological, geological and organic material through radiocarbon dating (^{14}C) and dendrochronology dating (tree-ring analysis). The department which was previously the *Department of Archaeometry* changed its name in 2014. The abbreviation «SA» is used on a provisional basis.

In 2014: The Department was strengthened by an additional associate professor and two post-doctoral research fellows. This has increased its research activities and provided greater momentum in the upgrading of the radiocarbon dating laboratory. The amount of research activities also improved considerably in both dating methodology and its practical application. Preliminary work began to establish cosmogenic radionuclide dating at the laboratory. Developments in the field of species determination of trees were also pursued. The 2014 objective of reopening the ^{14}C-dating laboratory was not achieved on time because the rebuilding of the laboratory and new preparation systems proved to be more extensive than predicted.

In 2014 samples from the chapel in the Archbishop's Palace in Trondheim, were collected for ^{14}C-dating

THE DEPARTMENT OF ARCHAEOLOGY AND CULTURAL HISTORY (SAK)

The Department of Archaeology and Cultural History (SAK) studies pre-historic, historic, maritime, and Sami archaeology. It conducts archaeological excavations in accordance with Norway's Cultural Heritage Act. It hosts the Museum's cultural heritage conservation laboratory, and is responsible for the cultural history collections, as well as teaching the professional archaeology programme.

In 2014: The level of activities in the Department was moderate in 2014. The period was distinguished by numerous important finds from full-scale and investigative archaeological excavations. Substantial pressure on collecting and preserving artefacts continues as large numbers of finds have been recovered in snow patch and through metal detector searches. These discoveries also represent significant contributions towards our understanding of Mid-Norway's past. The Department's archaeology degree programme was thoroughly revised in 2014 in collaboration with NTNU's Department of Historical Studies. The Department also launched a new research strategy for the period 2014-2019.

Archaeologists clean a cultivation layer dating from the Pre-Roman Iron Age, at Sjetnan Øvre in Trondheim, summer of 2014.

THE DEPARTMENT OF PUBLIC OUTREACH AND EXHIBITIONS (SF)

The Department of Public Outreach and Exhibitions (SF) is responsible for producing and maintaining the Museum's exhibitions, coordinating public events and school programmes, and other educational offerings. The Department also manages the Museum Shop.

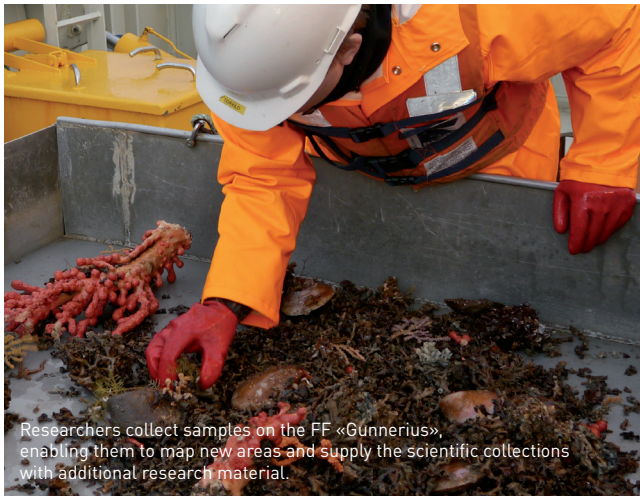
In 2014: The Bicentenary Celebration of the Constitution gave the NTNU University Museum the chance to display some exceptional objects from our storage in the exhibition *A game between superpowers – Trondheim 1814*. The school sector is an important target group for the Museum and the Department of Public Outreach and Exhibitions welcomed close to 11 000 students in 2014, from kindergartens, primary, and secondary schools.

The opening of the exhibition *A game between superpowers – Trondheim 1814.*

THE DEPARTMENT OF NATURAL HISTORY (SN)

The Department of Natural History manages and contributes to the Museum's natural history collections. The Department conducts research in biogeography, biosystematics, and ecology with an emphasis on conservation biology. The two botanical gardens form part of this department.

In 2014: The Department has experienced a considerable rise in research activity as a result of an increase in publications, applications to the EU and the Research Council of Norway, and higher than average attendance at international conferences in and other networking activities. This high level of activity from the Department of Public Outreach and Exhibitions contributes to the Museum's interaction with the general public. In terms of the Department's academic courses, the launch of a massive open online course (MOOC) added buzz in 2014. The Museum's work on its scientific collections indicate that the Museum, to a large extent, employs the resources offered by MUSIT (The NTNU University Museums' collective IT-organization) in an efficient manner. Moreover, the Museum's contributions towards the developments of such IT solutions are significant.



Researchers collect samples on the FF «Gunnerius», enabling them to map new areas and supply the scientific collections with additional research material.

RESEARCH AND KNOWLEDGE DEVELOPMENT

The Museum's efforts to become a highly regarded producer of knowledge for administrators of culture, nature and the environment internationally, has yielded positive results. The Museum has seen favourable progress in its research, both in terms of the relevancy of its projects and its publication profile. In accordance with its Strategic Plan 2011-2016, the NTNU University Museum focuses on six overall research topics.

RESEARCH TOPIC: BIOSYSTEMATICS AND EVOLUTION

Biosystematics is the study of variance, through the description of biological diversity and the understanding of processes which lead to evolutionary changes. This encompasses naming species, deducing the relationship between different organisms, gaining an understanding of how species formation occurs, and analysing the history of all living creatures on earth.

In 2014: The Biosystematics and Evolution Group has maintained its high rate of scientific output with just under five published articles per employee in international journals. The group produced a successful grant proposal for the Research Council of Norway and the resulting position for a post-doctoral research in biosystematics will be filled in 2015. Various projects concerning moss, lichen, and freshwater, and saltwater invertebrates were prioritised. The Group's activities are closely linked with DNA-barcoding through the national infrastructure headed by the Museum.

The basket star *Gorgonocephalus caputmedusae*, a medusa's head, is a distinctive species that lives among corals.

RESEARCH TOPIC: HUMANS, NATURE AND LANDSCAPE INTERACTIONS

Biological conservation research aims to identify what factors determine species' spread over time and space, how the variations in the environment affect the structure and dynamics in different populations, communities and natural environments, and how to preserve biological diversity and ecosystems on all levels. Research on the interaction between humans and our natural environment is key to understanding how we have influenced the environment during thousands of years, and how changes in nature have shaped human culture.

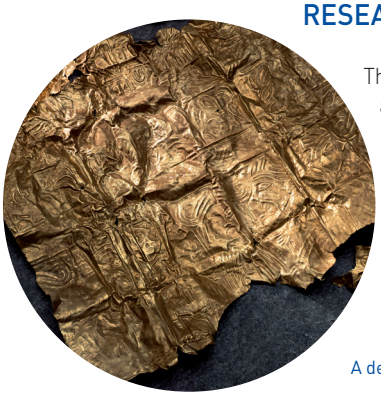
In 2014: The Conservation Biology Group has worked on a variety of different conservation projects regarding mires, seatrout, wild salmon, woodland birds, and sustainable grazing by domesticated and wild herbivores in mountainous and forested areas. The Group has also been represented in the Norwegian Directorate for Nature Management, and is included in NTNU's new strategic research initiative: "NTNU Sustainability". A comparative archaeological project explores the Norwegian and Tierra del Fuego pioneer settlements and their adaptability in terms of landscape and exploitation of maritime resources. This is a interdisciplinary research project on the effects of climate change through the examination of archaeological, biological, and geological remains found in snow patches in the mountains.

RESEARCH TOPIC: PRESERVATION IDEOLOGY AND MUSEOLOGY

Preservation ideology provides the theoretical principles on which legal and applied environmental protection is built. Museology involves the processes that contribute to the establishment, maintenance, and changes of museums, historically and at present.

In 2014: The Department of Archaeology and Cultural History has conducted research in a doctoral- and post doctorate project on the cultural heritage management's maritime section and the NTNU University Museums' museological management and future role in society. The Department of Public Outreach has a PhD position within the field of museology.

RESEARCH TOPIC: MATERIAL CULTURE AND OTHER FORMS OF CULTURE



This research studies artefacts and other forms of culture expressed through archaeological material and places them in the context of their geological origins, and their consistency, change and variation in Norway, Europe, and globally. It also reviews previous theories connected with this field.

In 2014: A doctoral project has revealed the practices of war and organized violence in Mid-Norway from around the year 100 to 900 BC. Another doctorate has conducted an analysis of depot findings, (objects which have been hidden or buried underground as a sacrifice or in an attempt of concealment), dating from the period of around 2350 to 5000 BC. Researchers

A decorated sheet of gold was, among other objects, found by an amateur metal searcher at Tornes in Fræna.

from Scandinavia and Great Britain have utilised archaeological finds, historical, and literary sources to establish a foundation on which to analyse coins uncovered in medieval Scandinavian churches and cloisters. The fieldwork season was characterized by an increase in the number of archaeological field surveys following metal detector finds. Important and rare objects were found which made significant contributions to the existing body of knowledge. The employment of photogrammetry on the rock art site Honnhammer rendered great results. Another noteworthy contribution towards our understanding of Vikings' daily life is the discovery of a number of longhouses and pit houses in Viklem, Ørlandet.

RESEARCH TOPIC: TECHNOLOGY-BASED METHODS

Conservation technology entails the conservation and safeguarding of movable and immovable cultural heritage artefacts for future generations. It is founded on the study of scientific and technological subjects that may increase our understanding of the materials of cultural artefacts, their construction and deterioration, and the development of technology-based methods of conservation and strategies for safeguarding. Archaeological fieldwork methodology consists of the methods and strategies for documenting and collecting archaeological data. This includes excavation techniques, the use of geographic information systems to measure structures and draw findings, geophysical information systems and other methods of distance measurement, and photographic and field conservation techniques.

In 2014: The application of methods of distance measurements in archaeology are explored and developed through two doctoral projects. The first studies the application and development of geophysical methods within research and management of different categories of cultural artefacts. The second project is linked with NTNU's Centre for Autonomous Marine Operations and Systems (AMOS), and explores the use of autonomous technology to determine and diagnose archaeological remains on the seafloor.

RESEARCH TOPIC: AGE DATING METHODOLOGY

Radiocarbon (^{14}C) and dendrochronology research contributes both to the enhancement of the precision of dating methods and supports its expansions into other application areas. The methods are employed in a series of research projects and generate new knowledge within a range of fields such as scientific and cultural anthropological studies of climate and environmental development, building history, and developments in landscape, culture, and settlements.

In 2014: Research has centred on the development of the AMS-Radiocarbon dating laboratory (Accelerator Mass Spectrometry), and the initialization of cosmogenic radionuclide dating. Both radiocarbon-, and dendrochronology dating have been applied in a number of projects in climate-, environmental-, and glaciological research. Dendrochronology has been included in multiple surveys of historical buildings.

The number of finds from melted snowdrifts have increased significantly. These arrows from the Oppdal mountains are examples of such finds.

PROJECTS FUNDED BY THE RESEARCH COUNCIL OF NORWAY AND THE EEA

Overall program in parenthesis.

PROJECT MANAGER/COORDINATOR:

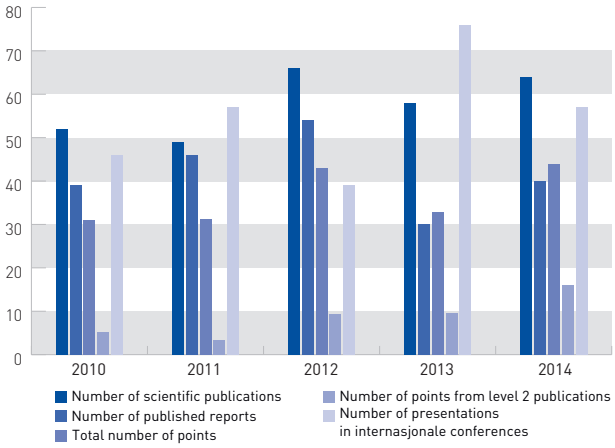
NorBOL	Norwegian Barcode of Life (FORINFRA)
MANECO	MANaging ECOsystem services in low alpine cultural landscapes through livestock grazing (Miljø2015 "Environment2015")
SPARC	Snow Patch Archaeology Research Cooperation - The effects of climate change on vulnerable high mountain heritage environments. (Miljø2015 "Environment2015")
Marine Ventures	Comparative perspectives on the dynamics of human approaches to the seascapes of Tierra del Fuego and Norway. (LATIN-AM)

PARTICIPATING:

ForBio	The Research School in Biosystematics - towards permanent existence (UNI-MUSEER)
Forsking i felleskap	(UNI-MUSEER)
Musvit	Museums' knowledge, museology - Museological investments in the NTNU University Museums, - The road ahead ("Vegen videre") (UNI-MUSEER)
Religion and money	Economy of salvation in the Middle Ages (FRIHUMSAM)
MIRACLE	Mires and climate: towards enhancing functional resilience of fen peatlands (EEA)
SFF AMOS	Centre for Autonomous Marine Operations and Systems (SFF)
SFF CBD	Centre for Biodiversity Dynamics (SFF)

SCIENTIFIC PUBLICATIONS

The Museum adheres to the Norwegian Scientific Index which awards points according to an institution's number of scientific publications. The Museum's number of points increased 30 % from 2013 to 2014. Moreover, the overall quality of publications, measured as the proportion of level 2 publications, improved by 20 %. The Museum is now well on its way to accomplishing its 2016 objective of producing 50 % of its scientific publications based on its scientific collections or time series.



	2014 Results	2014 Objective	2015 Objective
Scientific publications based on collections or time series	45 %	48 %	50 %
Events with international participation	18 %	19 %	22 %
Proportion of digitised cultural history collections made available online	80 %	88 %	82 %
Proportion of digitised natural history collections made available online	61 %	62 %	65 %

PUBLIC OUTREACH

The lack of any major events or exhibitions during the last two years has resulted in a lower number of visits to the Museum, especially compared to the record years of 2010 and 2012. The museum provided a good level of activities for School Services in 2014. The Museum is, however, in need of an extensive effort to become a more active arena for public outreach activities. Consequently, the most pertinent issue at hand is to encourage this through collaboration with the University's four strategic research initiatives.

EXHIBITIONS AND ARRANGEMENTS

The NTNU University Museum celebrated the Bicentenary Celebration of the Constitution of Norway by opening of the exhibition *A game between superpowers – Trondheim 1814*.

The exhibition sheds light on the major political events in 1814 and their ramifications for Trondheim's population, and describes the inhabitant's day-to-day life in this volatile era.

In addition to its permanent exhibitions and its activities at Ringve Botanical Garden and Kongsvoll Alpine Garden, the NTNU University Museum hosted 11 temporary exhibitions. This included, among others, "Imaginary – Interactive, creative and beautiful mathematics", and "Marine Ventures: Stone Age foragers in the seascapes of Norway and Tierra del Fuego".

The Museum has arranged thematic Family Sundays, where visitors meet researchers and information about the institution's research. Examples of such events are *Mathematics for children of all ages*, *Old plants –*

new opportunities, and *The animals' Christmas*. For the fifth year in a row the Museum issued invitations to children between 10 to 12 to its summer school programme "Sommerlarm", in which participants engage in a series of research-based activities.

In cooperation with biologist Kari H. Bachke Andresen and the national project *Den kulturelle skolesekken* (The cultural school bag), the Museum's School Services provided a unique educational experience for schoolchildren: *Welcomed by the sea – the story behind the taste*. In a period of three weeks approximately 1000 schoolchildren and teachers participated in the program, and gained experience and knowledge concerning marine resources, species and the administration of local resources in the Trondheim Fjord.

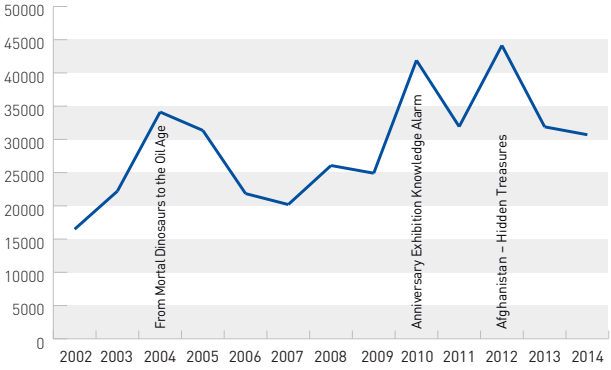
ATTENDANCE

The total number of visitors of exhibitions and botanical gardens remained the same from 2013 to 2014. Attendance at exhibitions was, however, far lower than in 2010 and 2012 when the Museum could offer new and extensive exhibitions and accompanying events. Approximately 30 % of visitors are schoolchildren participating in structured School Services outreach programmes. A total of 527 such programmes were organsied in 2014. The Newton energy room housed and provided lectures for 62 individual school classes from the 9th grade (ages 14 to 15). The room is a collaboration between the NTNU University Museum, the Municipality of Trondheim, and the Trondheim Science Center.

ATTENDANCE 2002- 2013, EXHIBITIONS AT KALVSKINNET

The number of visits in 2014 corresponded well with the Museum's ambitions for the year. The expectancy for 2014 was to be a year with a moderate number of visits, without large or costly investments in exhibitions.

	2014 Result	2014 Objective	2015 Objective
Total number of visits Number of estimated visits to the botanical gardens only	124 036 92 000	128 500 92 000	128 500 92 000
Number of School Services public outreach programmes arranged for class visits	527	560	535
Total number of guided tours given	720	770	715
Total number of exhibitions (permanent/ temporary)	4/11	4/11	4/11

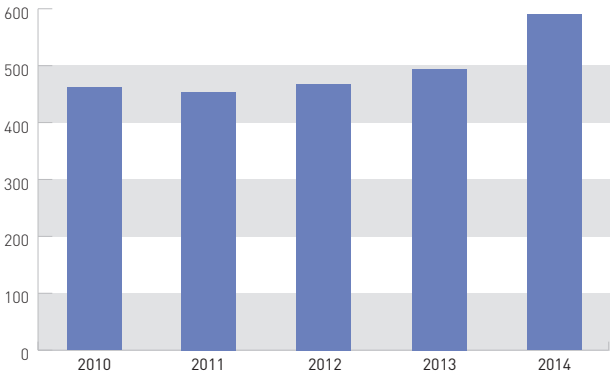


82 %
of the Museum's visitors have free admission
These include individuals under the age of 18, NTNU staff, and students

PUBLICATIONS IN CRISTin

In 2014, the total production rate of content aimed at both the general public and specific target groups registered in CRISTin (Current Research Information System in Norway), was considerable. However, half of the total content produced was generated by a handful of the scientific staff.

RECORDED PRODUCTION OF CONTENT



Source: CRISTin

6 out of 53
members of the scientific staff produced **50 %** of the total content generated in 2014

15 out of 53
members of the scientific staff produced **75 %** of the total content generated in 2014

Source: CRISTin

COMMUNICATION

MEDIA COVERAGE

	2010	2011	2012	2013	2014
Media coverage in Norway	762	867	1064	723	824

Source: Retriever.

16 Forskning.no	**9** Science Nordic	**16** Gemini

Collaboration was initiated in 2014 between the newspaper Adresseavisen and the Museum. The result is a weekly publication in the newspaper's Saturday supplement where the Museum presents an artefact from its cultural history collections. A total of 12 articles were published in 2014 and the joint endeavour continues on in 2015.

500 multiscarfes, or "scuffs", were handed out to raise awareness for the NorBOL project and its campaign **#mydnabarcode.**

DIGITAL AND SOCIAL

Visitors in 2014:

66 898 ntnu.no/ vitenskapsmuseet and ntnu.edu/museum	**23 427** The NTNU University Museum's blogs	**50 870** Norark.no

Source: Google analytics

NTNU changed its provider of website statistics services to Google Analytics for its webpages in 2014. Data collection did not begin until the middle of January. As such, the figures cannot be compared with previous years.

5 351 Facebook followers **NTNU Vitenskapsmuseet** Number of user engagements **31 496**	**1 449** Facebook followers **Ringve botaniske hage** Number of user engagements **14 873**	**2 972** Facebook followers **Norark.no** Number of user engagements **23 111**

Source: Google Analytics

107.907 page views on **Norark.no**

EDUCATION AND RECRUITMENT

Employees of the NTNU University Museum participate in the education of NTNU's students and provide supervision for master's and doctoral students. NTNU's archaeology course is a collaboration between the Museum and NTNU's Department of Historical Studies. The Museum is responsible for teaching classes related to museum studies and methods of field archaeology to archaeology students. In addition, it provides lectures at NTNU's Faculty of Natural Sciences and Technology on subjects in biogeography and ecology, and is in charge of the lectures on biosystematics.

STUDENT ACTIVITIES:

One of the main challenges facing the archaeology programme is an increase in the number of student withdrawals from its undergraduate course. This trend is reflected in the number of field course days recorded in 2014, as fewer participating students consequently result in an overall lower number of days. This issue is one of the areas addressed in the new archaeology study programme A massive open online course (MOOC) titled *Diversification in Time and Space* was developed by Professor Hans Stenøien in 2014. The course consists of video lectures, online questions corresponding to each topic, and discussion groups.

	2011	2012	2013	2014
Archaeology: Number of completed theses with supervisor at the Museum	3	2	4	3
Biology: Number of completed theses with supervisor at the Museum	4	3	1	6
Archaeology: Number of field course days	1 824	1716	1300	1135
Biology: Number of field course days	1 220	1207	1072	1015
Archaeology: Number of taught classes	2144	2216	2389.5	2181.5
Biology: Number of taught classes	1101	1034	1312	1308

The NTNU University Museum publishes reports online which can be downloaded for free by the general public. In 2014, the Museum began to publish its archaeological excavation reports online, including those of previous years. The Museum is pleased with number of downloads, not only for the current year's report, but also those of previous years which continue to be popular years after their original publication dates.

NTNU University Museum natural history note Published reports 2014 **14** Number of downloads **3 000**	NTNU University Museum natural history note report Published reports 2014 **6** Number of downloads **1 256**	Archaeological excavation report Published reports 2014 **12** Number of downloads **2 266**

Source: Liferay (as of 3 March 2015

SCIENTIFIC COLLECTIONS

The greatest challenge to the Museum's efforts of safeguarding and conserving its collections, both in the short and long-term, is a lack of satisfactory museum storage and sufficient capacity. An assessment of the risk and vulnerabilities of the storages was conducted in 2014. Consequently, appropriate amendments of the current museum stores were identified, priorities were set, and a planning scheme and routines were revised.

One of the more challenging tasks of 2014 was securing the museum storages and collections from vibrations caused by the construction site located next to the Museum. This was particularly true for the ecclesiastical art collection that has previously been partially open to the public, which was secured on-site by being taken down, and encased. The operation was planned and executed by the Museum's own conservation staff.

The NTNU University Museum is in charge of identifying, documenting and securing NTNU's historical collections, a project which only fully commenced in 2014. The Museum has developed a strategic plan which details the management and public outreach initiatives of these collections.

During autumn 2014 a substantial archive containing documents from archaeological excavations was bequeathed to the NTNU University Museum from the Trondheim branch of the Directorate for Cultural Heritage. On account of archival considerations the collection was initially planned to be transferred to Oslo. However, in order to ascertain that valuable documentation affiliated with objects from the Museum's own collections was stored alongside its respective collections, the decision was made to transfer the archives to NTNU.

The Museum's securing and conservation of collections have since 2006 been organised through the Revita project, which is financed by the institution itself and the Norwegian Ministry of Education and Research for the conservation and safeguarding of such collections. The Revita project will be phased out at the end of 2015. In 2014, the measures for the final stage of the project were re-evaluated, based on the Risk and Vulnerability (ROS) assessments, existing expertise, and academic priorities.

2014 EXPANSIONS	
Total number of objects in the natural history collections	1 308 765
Number of objects added to the natural history collections in 2014	27 253
Total number of objects in the cultural history collections	1 506 491
Number of objects added to the cultural history collections in 2014	6 007

Beginning in 2014, the count of the natural history collections will only include physical objects catalogued. In previous years the count also included objects which were registered exclusively as data collections. Numbers from the cultural history collections do not include any estimations of the quantity of unregistered/uncatalogued materials collected.

In 2014 the high level of activity among those searching with metal detectors and amateur searchers resulted in a number of discoveries of artefacts in the region. In total, 201 finds from metal detectors were received and evaluated, and so far 64 of these have been added to the Museum's collections.

40	15	9
discoveries by metal detectorists in Sør-Trøndelag added to the collections	discoveries by metal detectorists in Nord-Trøndelag added to the collections	discoveries by metal detectorists in Møre og Romsdal added to the collections

AGE DETERMINATIONS

	2010	2011	2012	2013	2014
Radiocarbon dating	1 414	1 493	1357	0	0
Dendrochronology dating	231	461	627	307	153

No commissioned radiocarbon dating was carried out in 2014 since the laboratory was being upgraded. The decline in the number of dendrochronology datings, compared with the previous year, was due to considerable time spent on a material which was ultimately deemed unsuitable for testing, and in-house research being prioritised.

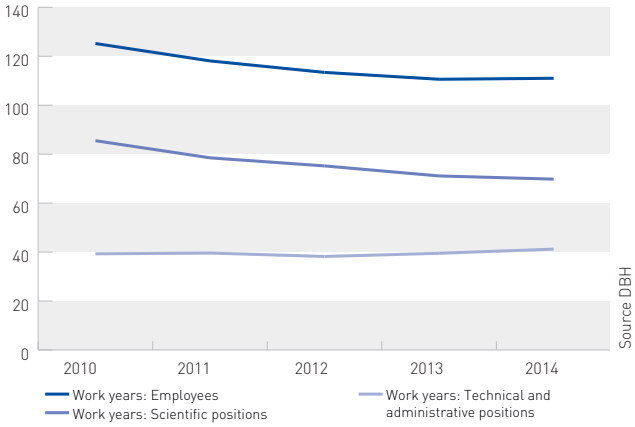
EMPLOYEES AND ORGANISATION

The total number of work years by the NTNU University Museum has declined over several years. In the period between 2010 and 2014, the number declined from 125.2 to 111. The Museum's has the highest proportion of administrative and technical positions at NTNU, and it is within these two sections that the number of positions has decreased. In contrast, the number of scientific positions has increased during the same period.

The decline in administrative and technical positions has largely been due to the conclusion of the REVITA project: The Museum's 10-year conservation programme, which will end in 2015. Consequently, a plan has been made on how to maintain the knowledge and the academic and professional relations gained from the project.

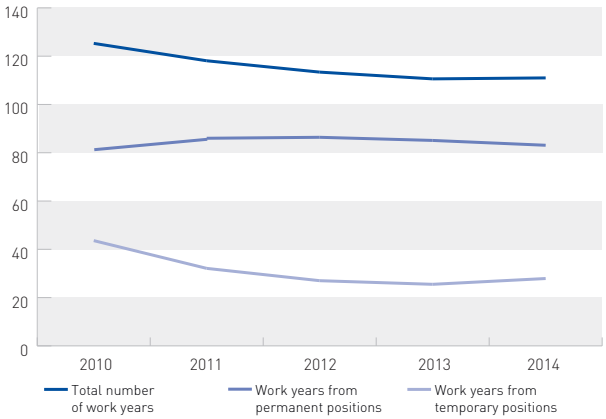
Before Christmas of 2014, NTNU conducted a work environment survey, which focused on the psychosocial work environment and the organisation of work. A follow-up of the survey will be performed in 2015.

WORK YEARS: SCIENTIFIC AND TECHNICAL-ADMINISTRATIVE POSITIONS



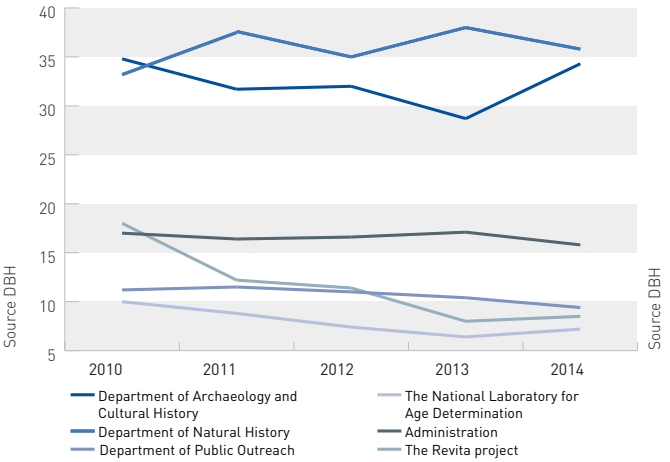
Excludes field work years on an hourly basis

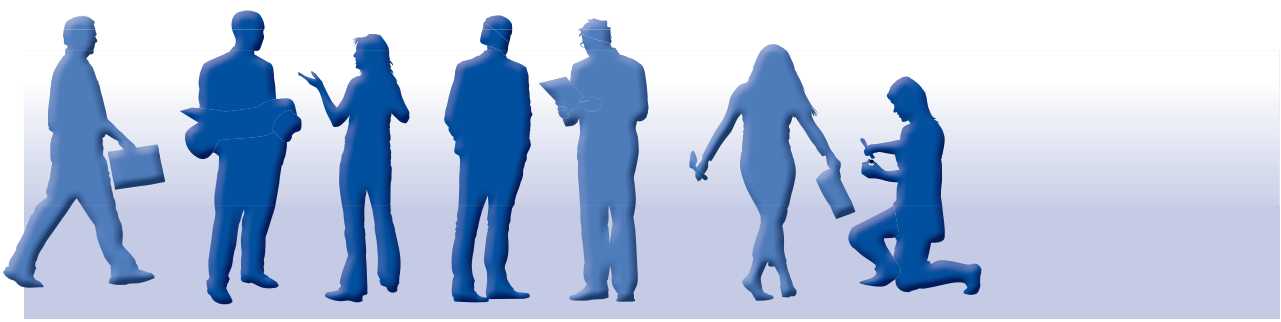
TOTAL WORK YEARS: PERMANENT AND TEMPORARY POSITIONS



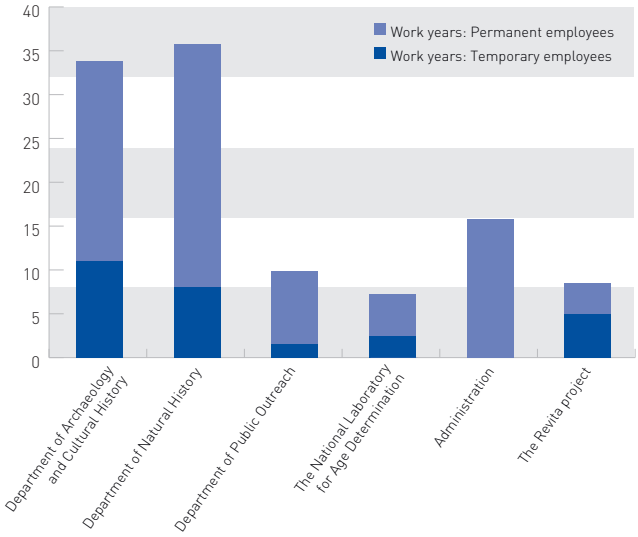
Excludes field work years on an hourly basis

WORK YEARS BY DEPARTMENT AND ADMINISTRATION



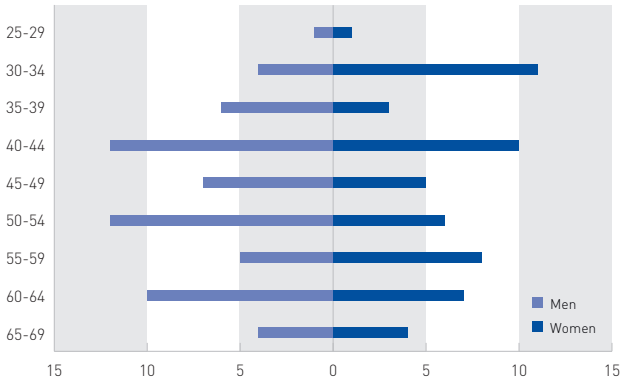


2014 WORK YEARS BY DEPARTMENT AND EMPLOYMENT STATUS



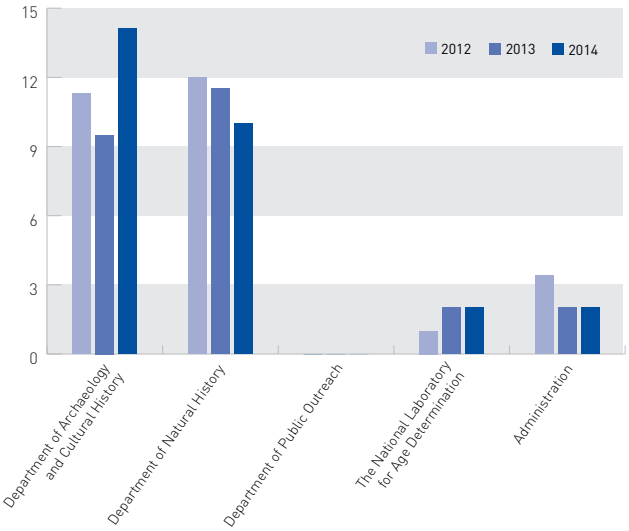
The majority of work years of the temporary employees in the Department of Archaeology and Cultural History, and Department of Natural History are recruitment positions.

EMPLOYEE GENDER AND AGE RATIO



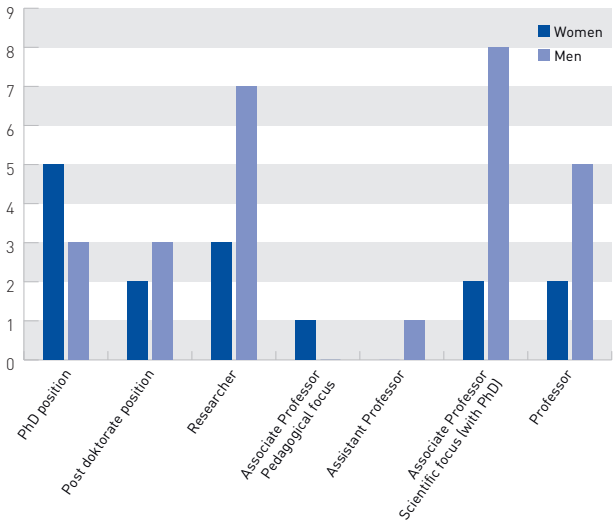
46,3 %
Proportion of female work years in 2014

EXTERNALLY FUNDED WORK YEARS BY DEPARTMENT



There is a high proportion of externally funded work years in the Department of Archaeology and Cultural History (SAK) and the Department of Natural History (SN). Public heritage management is the cause of the high numbers at SAK. At SN, the high share of contributions and commissions is responsible for the elevated results. To cover the cost of these work years the Museum is dependent upon a considerable scope on its externally funded enterprises.

GENDER RATIO OF SCIENTIFIC POSITIONS



The female proportion of employees in scientific positions has increased from 24 to 35.7 % from 2013 to 2014. The overall average at NTNU was 31.7 % in 2014. With the low number of scientific positions at the NTNU University Museum even small alterations between years produce a significant difference in the gender balance.

ECONOMY AND INFRASTRUCTURE

The Museum is a public body that continually aims to optimize the use of all available resources, including its financial, personnel and infrastructural resources. Every year, a collective financial statement is prepared for NTNU, including an income statement, balance sheet, notes and cash flow statement. There is no separate balance sheet for the NTNU University Museum as these are not prepared at a unit level at NTNU. For details concerning NTNU's income statement and balance sheet, please see http://tiny.cc/Arsregnskap

The 2014 NTNU University Museum income statement shows a surplus of NOK 2.64 million, with NOK 1.9 million originating from NTNU's Strategy and Restructuring Funds (RSO) and NOK 0.75 million from the Museum's own managerial accounting. The surplus is largely due to vacancies and absences of leave in projects financed by the RSO and a higher than foreseen turnover on externally funded activities. As a result, larger reimbursements than predicted and budgeted for 2014 contributed towards the managerial accounting statement.

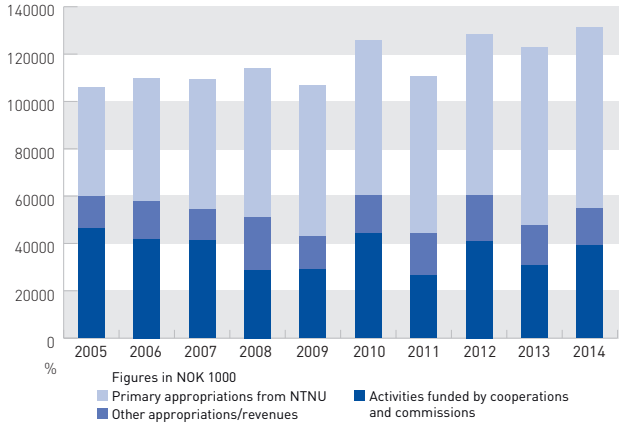
The negative accounting results in 2013, an outcome from a lower turnover from contributions and commissions than expected and investments in employee education and skills, reduced the reserve funds gained from previous transfers. The 2014 surplus of NOK 2.64 million was assigned to the post Unused Transferred Reserves, which constituted NOK 12.3 million at the end of 2014. The unused transfers consist of NOK 9.5 million for the Museum's managerial accounting budget and NOK 2.8 million for Strategy and Restructuring Funds (RSO).

The transferred reserves correspond to approximately 17 % of the typical operational appropriations of 2014. NTNU recommends that these transfers be between 5 to 10 % of the typical operational appropriations made available by NTNU Board. The NTNU University Museum has been given permission to increase the size of funds transferred. The Museum's externally funded income fluctuates throughout the year and reimbursements from externally funded activities cover the cost of several positions within the Museum.

The transfers at the end of year were at an acceptable level. For 2015 and the period 2016-2018, the objective is to achieve a balance between operating revenues and costs. Concurrently, the transfers create financial manoeuvring room, which can help strengthen the Museum's primary responsibilities and enhance its competitiveness, consequently resulting in an increase of externally funded enterprises.

Subsequently, the Museum plans to expand its number of applications to the Research Council of Norway and the EU. The Museum's consistent work towards international recognition in the international research field combined with an increased attractiveness to the general public, will further support revenues and maintain financial flexibility.

TOTAL INCOME DISTRIBUTION



Income has been posted based on slightly different premises during this period and figures cannot be directly compared with each other from one year to the next.

INCOME STATEMENT

Results (Figures in NOK 1000)	2010	2011	2012	2013	2014
Income distribution:					
NTNU appropriation (note 1)	78 129	76 600	80 225	87 399	88 523
External funding * (note 2)	44 198	26 551	41 052	30 677	39 129
Other income (note 3)	3 677	7 501	7 082	4 668	3 540
Total Income	126 004	110 652	128 359	122 744	131 192
Cost allocations:					
Investments (note 4)	4 554	1 880	2 557	3 093	1 503
Payroll and social security costs (note 5)	77 134	71 276	77 389	80 522	81 434
Other operating expenses (note 6)	30 669	21 935	32 742	28 200	25 089
Changes in business capital (note 7)	-758	-15	-556	-1 608	99
Internal rent paid (note 8)	15 577	15 551	16 385	19 478	19 482
Internal items (note 9)	-1 093	-812	1 204	178	937
Total expenditures	126 083	109 815	129 721	129 863	128 544
Result for the year	**-79**	**837**	**-1 362**	**-7 119**	**2 648**

* excludes indirect donations

NTNU APPROPRIATIONS (NOTE 1)

The Museum's appropriation revenues are relatively stable from year to year and are adjusted mainly according to wage and price inflation. Individual grants for scientific equipment, job recruitment or security measures may result in some variations.

EXTERNALLY FUNDED INCOME (NOTE 2)

Externally funded income is characterised as income rendered from the sale of services or activities that are not fully financed by NTNU's primary appropriations, which are granted by the Ministry of Education and Research or by funds from the Directorate for Cultural Heritage. Externally funded activities are defined as activities funded through commissions or collaborations. Public heritage management, which are archaeological investigations in accordance with the Cultural Heritage Act, form part of the activities funded by commissions.

The externally funded income presented excludes "indirect donations": income that the NTNU University Museum receives from donor(s) to cover a collaborative partners' share of a project. In 2014 this amounted to NOK 3.4 million. To facilitate an annual comparison, numbers from preceding years have been revised to exclude operational means.

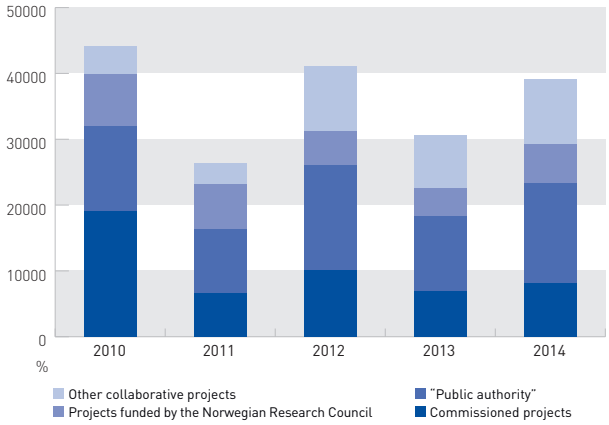
Collaborative projects are initiated by the NTNU University Museum and granted financial support from agencies such as the Research Council of Norway and the EU. Such projects often require partial self-funding of the project expenditures. Commissioned projects, on the other hand, are entirely funded by clients. In compliance with the Norwegian Cultural Heritage Act, archaeological investigations are fully financed by the land owner or by the Directorate for Cultural Heritage.

External income varies widely from year to year since the competition for both commissioned and collaborative projects is significant. Income from heritage management is cyclical, and the NTNU University Museum has little opportunity to influence the scope of this aspect of its enterprise.

Collaborative projects funded by the Research Council of Norway have experienced a decrease in revenues in recent years. Nevertheless, an increased effort towards the applications for grants have yielded positive results.

There have been no research activities funded by the EU in the period of 2010-2014.

TURNOVER FOR CATEGORIES WITHIN EXTERNALLY FUNDED ACTIVITIES (BOA) 2010-2014



Excludes operational means

OTHER INCOME: EXTERNAL AND INTERNAL (NOTE 3)

The NTNU University Museum receives grants from the Directorate for Cultural Heritage for services rendered for public heritage management. While grants have previously been recorded as part of the managerial accounts and other income, it will now be incorporated as part of the externally funded enterprise.

In 2014, this practice was revised and grants will now be recorded as part of the externally funded enterprise. In the financial statements of 2014 some of the grants from the Directorate for Cultural Heritage are included under "other income", along with income from ticket sales to exhibitions and revenue from the Museum's shop.

INVESTMENTS (NOTE 4)

Investments are recorded as costs in the income statement for each year. There is a central of fixed asset register of all investments at NTNU. Capitalized assets and depreciations are only recorded in NTNU's consolidated financial statements.

The acquisition of three servers and other IT equipment totalled NOK 0.54 million. In addition, upgrades of the alarm and access control system were installed in 2014.

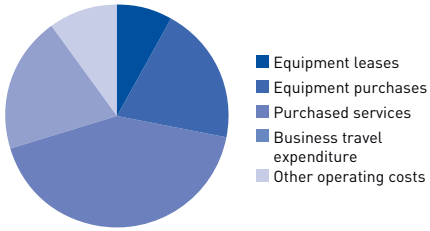
SALARIES AND EMPLOYEE'S SOCIAL CONTRIBUTIONS (NOTE 5)

The largest cost, salaries and employees' social contributions amounted to NOK 81.4 million and made up 60-65 % of total costs. Wages for staff covered by the externally funded projects totalled NOK 6.7 million.

In 2014, 28.1 work years were financed by reimbursements from externally funded projects at the NTNU University Museum. This corresponds to approximately 25 % of the Museum staff.

Annual remuneration for members of the Museum Board: NOK 36 000. Salary for the Museum Director, including employee's social contributions, was NOK 1 334 000.

OTHER OPERATING EXPENSES (NOTE 6)



Other operating expenses, which came to NOK 25.089 million, encompass operating and travel costs that are funded through the operating budget and external projects. Costs invoiced to clients of collaborative and commissioned external projects, totalled NOK 10.9 million in 2014.

AMENDMENTS TO BUSINESS CAPITAL (NOTE 7)

Changes in the business capital consist mainly of net results from concluded projects in 2014. The business capital has increased with NOK 99 000, and totalled NOK 2.415 million, as of December 31st 2014.

INTERNAL RENT PAID (NOTE 8)

The charged internal rent in the income statement in 2014 was NOK 19.482 million. Rent appropriation, which forms part of the appropriations granted by NTNU, was NOK 18.837 million. The discrepancy of NOK 0.645 million will be financed though the Museum's own appropriations and income from externally funded enterprises.

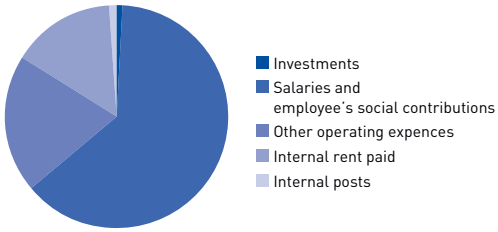
INTERNAL POSTS (NOTE 9)

Internal items encompass:

A) The sale of services and reimbursements between the income statement and the externally funded enterprise, own share, self-financing of collaborative projects, and the conclusions of such projects. In the result for the year these expenditures are omitted.

B) The sale of goods and services internally, and other internal items between the NTNU University Museum and other departments at NTNU.

DISTRIBUTION OF COSTS 2014

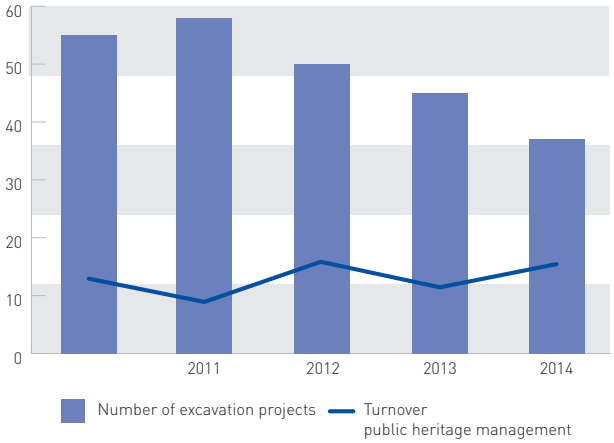


78 % of NTNU University Museum's appropriations are assigned to salaries, employee's social contributions, and rent.

PUBLIC OUTREACH SURVEYS

The graph presents the number of excavation projects and the total turnover of public heritage management of 2014.

In addition to regular university activities, the NTNU University Museum also conducts surveys on behalf of the Norwegian government on the topic of public outreach. However, there is no definitive correlation between turnover and the number of survey executed, since projects can differ extensively in size. The Museum is dependent upon having sufficient human resource capacity when accepting a project.



CHALLENGES AND MEASURES

INCREASING THE MUSEUM'S STRATEGIC LATITUDE

The Museum has few opportunities to realise projects that demand an increase in funds. Consequently, this limits the Museum's management and Board's manoeuvring room when initiating measures in compliance with the Museum's strategic plans.

MEASURES: The Museum will increase its degree of latitude by increasing employee contributions towards collaborative and commissioned enterprises, and by viewing the Museum and its departments' total resources in context and connection with each other.

INCREASED INTERNATIONALIZATION

The NTNU University Museums will develop an excellent research environment within its areas of expertise and in fields where it is especially qualified. This necessitates increased participation in international settings, which demand a focused effort.

MEASURES: The Museum will employ good recruitment procedures nationally and internationally, and stimulate an increase in the number of international applications.

A MORE ATTRACTIVE OFFER FOR THE GENERAL PUBLIC

When competing for the general public's time and attention the NTNU University Museum needs to offer attractive exhibitions and events. Exhibitions need to be perceived as current and relevant. It is essential to clarify the Museum's ambitions concerning its exhibitions. The Museum needs a clear profile of its exhibitions, which must also incorporate NTNU's activities, and carry sufficient leeway for collaborations, such as partnering with businesses.

MEASURES: The Museum will create a strategic plan for the exhibition enterprises, with an approach oriented towards atracting the general public.

UNSUITABLE PREMISES

The list of planned and initiated construction work in the university sector at large and at NTNU, specifically, is extensive. The NTNU University Museum's challenge is to highlight the growing importance of a centrally situated Knowledge Centre at Kalvskinnet that will drive professional and innovative public outreach initiatives, while also resolving the Museum's precarious need for suitable storage magazines.

MEASURES: The Museum will continue to communicate its need for a Knowledge Centre at Kalvskinnet to the university management and the Ministry.

A canopy, originally from a pulpit in Orkdal church, is taken down as part of the 2014 project of safeguarding the church art collection. The pulpit was granted by the Nordenfjeldske national museum of decorative art and design.

NTNU
Vitenskapsmuseet

Visiting address: Erling Skakkes gate 47a, Trondheim
Postal address: NO 7491 Trondheim, NORWAY
Tel.: +47 73 59 21 45 • E-mail: post@vm.ntnu.no
www.ntnu.no/vitenskapsmuseet

Project manager: Tove Eivindsen Photo: Åge Hojem, The NTNU University Museum. Exceptions: biological pictures page 7 and 8: Karstein Hårsaker, NTNU Vitenskapsmuseet. Crestock

Svanemerket trykksak fra Skipnes Kommunikasjon Lisensnr. 241 731