



Strategy document for the VISTA programme 2014–2019

A basic research partnership between
Statoil and The Norwegian Academy of Science and Letters



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Summary

This strategy for the VISTA programme is for the period 2014–2019. It builds on the collaboration agreement between Statoil and The Norwegian Academy of Science and Letters regarding the VISTA Programme for the same period. Established in 1985, VISTA is a collaborative partnership between the Norwegian Academy of Science and Letters and Statoil with the overall vision of *stimulating basic mathematical and scientific research related to the exploitation and management of Norway's petroleum resources*. In addition VISTA aims to be an arena for strategic discussion between academia, industry and society at large. An overarching goal for VISTA is high-calibre research with a special emphasis on developing young researchers.

Statoil donates NOK 20 million to VISTA each year for basic research. VISTA supports doctoral and post-doctoral research projects as well as a VISTA professorship within the defined priority areas.

VISTA aims to be a programme that nurtures new, groundbreaking ideas related to the exploitation and management of Norway's petroleum resources. For the period 2014–2019 VISTA has defined four priority areas within upstream activity focusing on methods for exploration and recovery of resources, field development, and protection of the environment in the areas where operations take place.

A variety of measures will be used to attain the goals. The main activity is the biannual call for applications for funding for doctoral and post-doctoral projects. In addition the programme supports a professorship. VISTA arranges a number of annual events including the VISTA Day each November and Scholar Meetings at the Academy.

VISTA maintains a clear focus on communicating the research results and highlighting the value for society of the research. The application process and calls for applications are publicised through the universities, and work is under way to raise the profile of VISTA through the media.

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Vision and goals

VISTA's overall vision is to **stimulate basic mathematical and scientific research related to the exploitation and management of Norway's petroleum resources.**

Further, VISTA will be a strategic tool for The Norwegian Academy of Science and Letters to identify first-class academic environments and through its grants help strengthen the collaboration between academia and industry in relevant fields.

In particular VISTA wants to identify and support talented researchers and be an important forum for strategic discussions between academia, industry and society at large.

VISTA aims to be a programme that nurtures new, groundbreaking ideas related to the exploitation and management of Norway's petroleum resources. VISTA focuses on upstream activities.

The following goals are particularly important for VISTA in the strategy period:

- Support high-quality basic research in mathematics and the natural sciences with a special emphasis on developing young researchers
- Encourage Norway's top academic institutions to get more involved in this type of research
- Focus on publishing results in the best international journals
- Create a forum and meeting place for collaboration between academia and industry, for example through the VISTA Day

VISTA's strategic goals

VISTA has set three strategic goals to help us realise our vision. Each of the goals has been formulated with more detailed milestone targets mapping out how the individual goals will be met.

Goal 1. Increase knowledge about the exploitation and management of Norway's petroleum resources

The petroleum industry is Norway's largest industry, and the continued exploitation and management of the resources requires increased knowledge and expertise in a broad spectrum of fields. Activities in the industry are moving towards new areas that challenge the current understanding of how we look for and recover resources and on how we develop and run operations. Resources must be exploited optimally and within the bounds of good environmental stewardship, not least with a view to the possibility of operations in our

Arctic waters. The use and management of natural resources must be knowledge-based, in line with the basic principles of the Government's Research Report 2013.

The resources must be managed in such a way that the areas will benefit future generations. Society also expects a high recovery rate, clean and efficient production, and access to new resources.

The following sub-strategies shall serve to help fulfil this goal:

Secondary goals:

- Support research in mathematics and the natural sciences that helps provide a basis for improved, safe exploitation of Norway's petroleum resources in the future
- Support the development of knowledge that will form the foundation for future technologies for exploration, recovery, development and operation
- Increase competencies related to exploitation and management within the bounds of good environmental stewardship

Goal 2. VISTA supports promising young graduates

Tomorrow's challenges require researchers who are able to think outside the box and push the limits. Young talents need to be encouraged and linked to good environments. VISTA attaches importance to the capacity for independent research of a high scientific quality and at a high professional level. Good ideas shall be nurtured and given room to grow, and talented scientists shall be given the opportunity to evolve. In this way VISTA will actively contribute to the push in society and by the Research Council of Norway to make a career in research more attractive to young scientists.

VISTA represents a unique meeting place where young researchers can be challenged and themselves challenge new ideas and concepts. VISTA scholars will have the opportunity to make use of the platform created between academia and industry and to be a player in the VISTA collaboration and petroleum research in general.

Secondary goals:

- Support talented young researchers with a particular focus on their capacity for independent and new research at the interface between industrial application and basic mathematical and scientific research
- Promote high scientific quality in the projects, research groups and candidates
- Further develop VISTA as an attractive career path for young scientists

Goal 3: VISTA as an academic meeting place

VISTA will provide an arena and meeting place for collaboration between academia and industry through regular annual events.

VISTA Day is held in November each year at the premises of the Norwegian Academy of Science and Letters. VISTA Day is a meeting place for leading people in research, education, industry and politics. VISTA Day aims to raise awareness about and create a common understanding of the energy supply challenges and opportunities we will face in the future.

Secondary goals:

- Develop the VISTA Day as an important arena for key issues relating to the design of future research into energy and energy supply
- Develop VISTA as a meeting place for young and more established researchers in academia and industry
- Be a researcher-driven programme by encouraging active discussion of VISTA's vision and strategy

Scientific and technical strategy – VISTA's priority areas

The Norwegian continental shelf is classified as a mature area, and according to the Norwegian Petroleum Directorate's resource estimates, the remaining recoverable resources correspond roughly to the amount that has been produced so far. Future production will consist of both improved recovery from existing fields and the opening of new areas.

VISTA's main vision is to stimulate basic mathematical and scientific research related to the exploitation and management of Norway's petroleum resources. This encompasses methods for exploration and recovery of resources, field development, and protection of the environment in the areas where operations take place. These are key elements in the value chain of all oil companies.

VISTA has defined four main priority areas: *Exploration*, *Improved recovery*, *Future development and operations*, and *Environment*. VISTA invites applications for funding for doctoral and post-doctoral projects, with a particular focus on projects that are relevant to more than one priority area.

Exploration

Increased knowledge about the structure and development of the continental shelf is essential for our ability to make use of our resources in the future. We need to understand how petroleum resources behave and are distributed. It is particularly important to increase knowledge about geophysical methods and how these methods can contribute to a better understanding of the distribution and behaviour of petroleum resources.

Key focus areas in the planning period include, but are not limited to:

- Large-scale geological and geophysical modelling
- Geophysical methods of measurement and processing
- Basin analysis

Improved recovery

Improved recovery from existing and future fields represents an important focus area to prevent significant resources from remaining untapped. Basic knowledge is required on many different levels, from analysis of entire basins to studies of the variations in the surface of the individual mineral grains, determining how oil and gas move in reservoirs. Improved recovery therefore requires improved basic understanding of the physical, chemical and biological processes associated with hydrocarbon mobility.

Key focus areas in the planning period include, but are not limited to:

- Reservoir characterisation
- Processes linked to the recovery of mobile and immobile hydrocarbons, including biotechnology
- Reservoir simulation and reservoir fluid properties

Future development and operations

Future developments and operations shall address key competences and technologies that can enable new field developments or secure continued operation from existing infrastructure. Future developments will face very strict requirements in terms of their robustness, integrity and accessibility, as production will take place far from the shore, in deeper waters, in areas with ice and in areas with stringent environmental regulations. In addition, the increased cost picture seen for new offshore field developments emphasize the need for simplified, energy efficient, and smart solutions. The industry needs a paradigm

shift from classical manned rigs to unmanned surface and subsea facilities. Technology and systems for increased level of automation ranging from remote operations to autonomy needs to be developed. Common for all challenges is that solving them will require new fundamental competence and new technologies.

Key focus areas in the planning period include, but are not limited to:

Integrity of structures:

- Materials technology and expected life time calculation
- Improved methods and tools for strongly nonlinear hydrodynamic phenomena
- Flow assurance and subsea processing
- Long-distance power supply
- Energy efficiency
- Technologies and competence to enable remote and autonomous operations

Environment

Continued exploitation of our petroleum resources requires greater knowledge about how operations affect life in the ocean and on land. This knowledge will form the basis for the management and use of the resources in the future without compromising the natural environment. It is particularly important to understand the dynamic and long-term effects of exploration and production on the food web. We need to understand what local consequences petroleum operations will have for the future use of these areas.

Key focus areas in the planning period include, but are not limited to:

- Environmental monitoring
- Dynamic effects on the food web
- Baseline studies in areas not yet opened for petroleum operations

Organisation of VISTA¹

Funding and instruments

Each year The Norwegian Academy of Science and Letters receives NOK 20 million from Statoil to fund the VISTA programme. In addition VISTA applies for donation-matching funding from the Research Council of Norway each year.

¹ See the document "Organisation of VISTA. Annex to the VISTA strategy 2014–2019" for more details.

The instruments that VISTA has at its disposal are project funding, its position as a forum for discussion, the communication of research results, and the programme per se.

VISTA allocates **project funding** to research fellows, post-doctoral researchers and a VISTA professorship. Candidates who are granted a VISTA scholarship (research fellows and post-doctoral researchers) are employed temporarily by The Norwegian Academy of Science and Letters. The Norwegian Academy of Science and Letters adheres to the Basic Collective Agreement for the Civil Service. VISTA invites applications for funding for around eight projects each year, four in the spring and four in the autumn. The application process is done in two steps, and applications for funding are invited via an open call. The total portfolio consists of 20 active projects on average.

Project categories

PhD projects

All project applications must have a named candidate and a project supervisor from an institution authorised to confer doctoral degrees. It is a precondition for VISTA support that the candidate is enrolled in a doctoral programme at the institution. The project supervisor must submit an annual report to VISTA. VISTA supports pay and operating costs for the entire project period. PhD projects have a duration of three years. If the scholar is given additional duties, the university takes over employer responsibility during the period that extends beyond the VISTA period of three years. A candidate may only be part of a VISTA project once.

Post-doctoral projects

VISTA can grant post-doctoral scholarships for up to three years. These follow the same principles as the PhD scholarships. As a general rule VISTA does not grant extensions, but exceptional circumstances may be considered by the board. Candidates may have had one post-doctoral period before the VISTA period. A candidate may only be part of a VISTA project once.

Professorship within the priority areas

VISTA supports a professorship at all times. The objective is to "liberate" a researcher of excellent repute so that he or she can work full-time on research and research supervision within their field of expertise. Part-time professorships may be considered in exceptional cases. The professorship is granted on the proviso that there is a research plan for the period of appointment and that the professor will be working at a recognised research institution.

The professorship may be used to recruit internationally leading candidates with a view to building up expertise in an important priority area for VISTA.

The VISTA professorship is normally advertised every three years. Institutions apply for the VISTA professorship themselves, and the applications are processed by the VISTA board.

Call for applications and processing of PhD and post-doctoral applications

VISTA issues a call for applications for funding for PhD and post-doctoral projects twice a year on 1 February and 15 August. This helps raise awareness about the VISTA Programme and ensure we attract the best candidates. The call for applications is circulated to relevant academic and professional networks, institutions and universities, and is published on forskning.no and www.vista.no.

All PhD and post-doctoral applications to the VISTA Programme follow a two-step process:

Step 1: The project supervisor submits a project outline within the deadline (one A4 page describing the project and with one named candidate). The area committee formulates a prioritised recommendation to the board ranking the projects that have applied for the period.

Step 2: The board invites relevant projects to submit a full application. The applications are considered by the area committee and are either recommended to the board or rejected. The board makes the final decision regarding approval of projects and candidates.

VISTA usually requires that candidates have an average grade of B or better. The final decision on a Step 2 application cannot be made before the candidate's grades from their Master's degree and PhD are available.

The criteria for selection of projects in the given areas are the qualifications and potential of the candidate and the scientific quality of the research group and the project. VISTA does not usually grant funds for permanent equipment.

Impartiality and peer review

The VISTA board follows the Research Council of Norway's Guidelines on Impartiality and Confidence in its processing of applications. VISTA board members cannot themselves apply for funding from the VISTA Programme. A panel is established to ensure good, efficient academic evaluation of the applications. The panel consists of two participants for each of the priority areas. The members are appointed primarily from among the members of the Academy; in areas that cannot be covered satisfactorily, members of The Norwegian Academy of Technological Sciences are preferred. If a board member is disqualified due to a

conflict of interest or if further professional assessment is required, at least one external peer is engaged and takes the board member's place on the area committee.

Communication and dissemination of research results

Through its annual events VISTA shall be a **meeting place**. Events include the annual scholar meeting at The Norwegian Academy of Science and Letters, and the VISTA Day, which is a forum for academia, industry and society.

An important part of VISTA's work is **communication and dissemination** through strategy meetings between the Norwegian Academy of Science and Letters and Statoil, as well as publication through the media. VISTA is a meeting place between the business world and the best academic teams to discuss knowledge development. In addition it is important to communicate the research results and highlight the value for society of the research. VISTA is also exposed through the open calls for applications for project funding.

The VISTA website is a brand-building information channel and a tool for potential VISTA applicants, relevant professional networks, and VISTA scholars and post-doctoral researchers. The VISTA website contains information about the organisation of VISTA, calls for applications, annual events, news, the strategy and priority areas, contact people, scientific publications and registration forms for open events.

Strategy Document adopted by the VISTA board on: 10 June 2014

English version revised on: 24 November 2014

Changed in accordance with board decisions 11.04.16.
and 12.09.16
and 20.09.17.