

The Swedish National Space Board's long-term strategy

focused on 2011 – 2015



This is an English summary of the Swedish National Space Board's strategy with a focus on 2011-2015. The strategy has been prepared to represent a basis for the prioritisation of grant utilisation. Another aim is to serve as the foundation for communication with stakeholders and clients. The authority's utilisation of grants shall be distinct, logical, transparent and reasonably predictable for stakeholders. The strategy shall be viewed as a description of how the authority interprets the government's instructions. The strategy applies until 2015, but will be evaluated and revised as necessary during the period.

1 Swedish National Space Board's mission, operation and grants

The Swedish National Space Board's (SNSB) mission is stipulated in the instruction (SFS 2007:1115), according to which SNSB shall promote the development of Swedish space operations and space research and thus:

- promote space operations and space research that contribute to the knowledge society,
- satisfy society's need of space operations with an impact on areas including transport, communication, environment and climate,
- promote space operations and space research contributing to innovation and competitiveness in industry, and
- work to ensure that Sweden contributes to and benefits from European space cooperation.

SNSB also plays a key role as the expert authority in national and international contexts.

SNSB receives grants from the Ministry of Education and Science and the Ministry of Enterprise, Energy and Communication. The allocation has been declining, but in two periods (2005-2007 and 2009-2010), funds were received for the Ariane programme; refer to Figure 1. SNSB's administrative grant has been relatively stable since 2004. The workforce comprises 16 people.

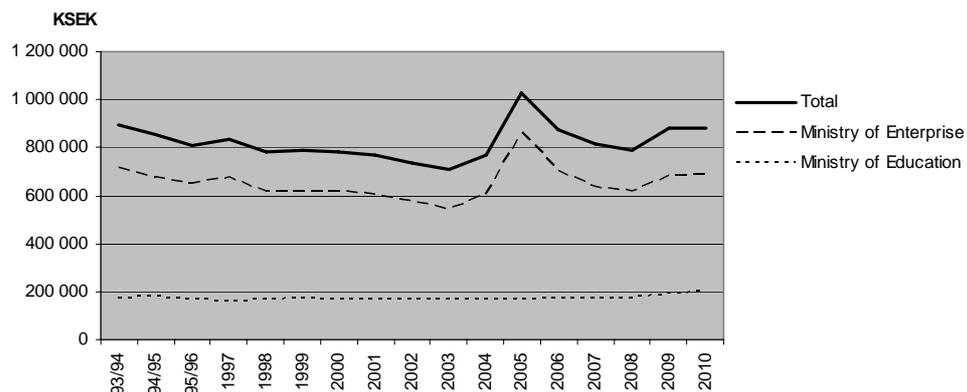


Figure 1: Operational grants calculated at current monetary value (July 2010).

The grant from the Ministry of Education and Science is distributed between the European Space Agency's (ESA) science programme, the national research programme and basic expenses for Eorange. Since the payments to ESA's mandatory programme and the basic expenses for Eorange are increasing commitments, the national research programme is decreasing over time.

The grant from the Ministry of Enterprise, Energy and Communication is mainly used for requirement-motivated technology development with a focus on applications of space technology, access to space and Earth observation. It mainly comprises technology development implemented by Swedish companies on assignment from ESA or SNSB in preparation for ESA projects.

During the past ten years, 65 per cent of SNSB's total grant has been used for Swedish participation in ESA. The remaining portion has been used in national and international projects that primarily comprise preparatory or supplementary activities to ESA programmes.

2 Conclusions of implemented current-status and business-intelligence assessments

The space infrastructure is becoming increasingly significant to society. The ESA programmes are increasing, in terms of number and size. Since SNSB's grant level during the same period has remained largely the same, it is no longer possible for Sweden to continue being involved and to participate in all areas.

The significance of the European cooperation is increasing and participating in European programmes is becoming more important for positioning Sweden in the prevailing international competition. At the same time, Sweden's geo return on its involvement in ESA is decreasing, despite measures to improve the situation. SNSB's previous strategy was not able to break this trend. In order to receive a better return, SNSB's funds must be distributed in a manner that provides Swedish industries with better opportunities to develop their competencies and obtain a market for their products.

A key effect of SNSB's strategy in the past ten years has been that more small companies are establishing themselves in the space sector. At the same time, the industry's total revenue has not increased significantly; instead, it remains directly proportional to SNSB's grant. If the support for technology development is to lead to better leverage, there must be increased focus on players that generate income, both inside and outside the space sector. Another reason to increase the support for technology development with broad uses is the ongoing restructuring of the European space cooperation. The anticipated change in the industrial landscape could lead to difficulties for small and mid-sized companies to maintain their competitiveness without direct government support. It will become more difficult for the space industry to survive solely on earnings from space projects.

Access to space is a necessary part of the space operations but is also a political objective. SNSB consigns a significant portion of the grant to the Ariane programme without having control of all the aspects of the resulting leverage for executing industries. At ESA's Council meeting at ministerial level in 2008, Sweden decided to remain outside ESA's development programmes for launchers, since the structure of the exploitation phase was deemed unsustainable. ESA has now presented a path ahead, which is in line with Sweden's requirements. It is uncertain whether this line will win majority favour, but there is enthusiasm for changes in the right direction. In 2009, the government decided that Sweden will continue to participate in the Ariane programmes and the preparatory programme for new launchers. If SNSB is able to evaluate the effects of this technology development outside the space sector, the launcher programmes may become an attractive sector. Sweden could play an active role in the European cooperation by recapturing previous shares in the launcher programmes.

Since society's need for satellite data and applications is increasing continuously, SNSB must prioritise knowledge development. With EU's new role in space policies, Sweden should profile its competencies and research facilities with this in mind.

Esrangle is a unique facility for space activities based on international convention. The main activities of today, balloons and sounding rockets, have the potential to develop further. In the long term, this could lead to larger sounding rockets being launched and eventually launchers for positioning satellites in orbit.

3 Strategic choice

SNSB sees three possible strategic focuses for the coming five-to-ten-year period: operations in space, the industry's competitiveness through space operations and access to space. These three focus areas contribute in different ways to how SNSB complies with its instructions. Focusing on operations in space is necessary for fulfilling the requirement of promoting the knowledge society and for satisfying society's need for space operations. All three options contribute in different ways to satisfying the other aspects of the instruction.

In focusing on **space activities**, emphasis is placed on support for method development for research in and about space and about the Earth. Tool development focuses primarily on payloads and secondly on space crafts. In Earth observation, data access for Swedish users is prioritised. Participation in ESA's mandatory science programmes will be central and supplemented with optional programmes that generate added value with respect to method development and scientific instruments. Target objectives:

- Swedish space research shall be at highest international level
- Swedish researchers shall be using satellites, balloon and sounding rockets for excellent research results
- Esrange shall be further developed as an attractive facility for research
- Swedish governmental agencies shall be able to utilise space infrastructure efficiently
- development of ground-breaking technology and innovations shall be stimulated, while the academy community and industry cooperate with the aim of increasing Swedish international competitiveness.

In focusing on the **competitiveness of industry through space operations**, space technology is prioritised, which is anticipated to result in commercial products, services or processes in the short or medium term. With this focus, priority is also placed on such general technology development that leads to Swedish industries becoming competitive without any direct connection to the Swedish user community. Target objectives:

- Swedish industry shall be competitive, primarily with respect to tools for space infrastructure
- space operations shall contribute to increased growth in Sweden
- Swedish industries shall serve as an active partner in the implementation of European space cooperation.

In focusing on **access to space**, priority is placed on technology development that is important to the European cooperation and to the developing companies' competitiveness in general, meaning, outside the space sector as well. Participation in ESA focuses primarily on programmes that utilise Esrange's facilities and that develop technology for launchers. Sweden's contribution could have both organisational and industrial significance. Organisational significance pertains to what Sweden can contribute to the European launcher cooperation and the role Esrange plays in the short and medium term. Target objectives:

- development of technologies applicable in the launcher sector shall lead to Swedish industry becoming internationally competitive and generating increased growth in Sweden
- Swedish industries shall play an active role in maintaining European access to space
- Esrange shall be developed into becoming an active part in European access to space.

4 SNSB's choice of strategic focus

SNSB can state that all the above-presented focus areas are well suited to SNSB's operations. However, with the current grant level, it will be necessary to prioritise among the areas. SNSB believes that ongoing changes in the business world will generate the largest opportunities for the future through efforts focused on **space activities** and **access to space**. SNSB also believes that this would be an advantage for Swedish scientists and other users, as well as for Swedish industry in the long term.

Space activities entail focusing on Swedish scientists and authorities receiving continuous access to requisite data through international projects (in or outside ESA). Access to space entails investing in such technology development that contributes partly to the target of European access to space and partly to Esrange developing as a research facility for space operations. For the largest possible leverage, SNSB will be focusing on technology that supports both of these focus areas, while having the potential to contribute to growth in a larger perspective. Of necessity, this will also include sectors other than space and impose new demands on how SNSB measures anticipated results.

Since the current levels of appropriations are not sufficient to maintain the level of activities as of today SNSB must make priorities, with subsequent reductions in space programmes. Sweden may have to reduce its participation in ESA's optional Earth observation, telecommunication and navigation programmes, although without sacrificing the users' need for data. Funds could then be distributed to the areas involving space activities and access to space. Reprioritisation in accordance with the selected strategy should result in increased participation in the launch vehicle programmes by the time of ESA's next minister meeting.

SNSB intends to request new funding for various prioritised projects in the coming budget process. Both research into and about space and Earth Sciences have the potential to grow. In addition, potential operations at Esrange have previously not been prioritised for financial reasons. Examples of such operations are scientific use of stratospheric balloons, testing technology designed to be transported on space ships in the future and the possibility to position satellites in orbit.

In this document, the focus on SNSB's strategy has been presented without any explanation as to how the strategy is to be implemented or the immediate consequences. The strategy aims to sharpen the focus on resources so that operations will be adapted to the grant level and on changes in the surrounding world. This will lead to changes, which will however be implemented gradually. The current Swedish space operations were built up over an extended period and dramatic changes could cause unnecessary complications, primarily in the international cooperation, but also nationally. It is the objective of SNSB, in a dialogue with its stakeholders, to establish a distinct and transparent process for the transition to and implementation of the strategy that has been presented.