



# WE HELP EARTH BENEFIT FROM SPACE

IN SUMMARY 2019

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## About this report

This is an English summary of Swedish Space Corporation's (SSC) 2019 Annual and Sustainability Report.

The Swedish report, available at our website, is the legally binding annual report.

The report summarizes the 2019 fiscal year and covers performance on issues most important to SSC's ability to deliver value to stakeholders in a changing and complex business environment. This summary serves as our United Nations Global Compact (UNGC) Communications on Progress.

Visit:  
<https://www.sscspace.com/about-ssc/finances/reports-archive/>

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# 2019 HIGHLIGHTS

2019 was another year of exciting space missions and projects for the space sector as a whole, but also for SSC. The rapid development has allowed us to grow and take new steps to prepare for the future.

## MASER 14 and inauguration of SubOrbital Express as a service



Our MASER 14 sounding rocket reached an altitude of approximately 250 kilometers and spent over six minutes in microgravity. The mission inaugurated SubOrbital Express, a service to enable research into microgravity applications, atmospheric physics or other scientific disciplines. In this microgravity environment, we conducted experiments on fluid drainage, X-ray radiography and dust formation.

Read more: <https://www.suborbitalexpress.com>

## Inauguration of exciting antenna art in Inuvik

The two SSC antennas at the Inuvik site are painted by the local artists Anick Jenks and Ron English. The project wants to honor the indigenous cultures and their history, and to acknowledge the diversity of the people in Inuvik.

For SSC, there is a symbolic meaning to this particular antenna painting as our ground station solution Infinity offers coverage around the globe, connecting people and continents by enabling satellites to stay in contact with Earth.



Photo: Weronica Murray

## High-profile Moon landing attempt by Spacell

We supported Israeli Spacell in its attempt to land on the Moon, by servicing the spacecraft in orbit and communicating with Earth throughout the mission. Although technical difficulties prior to landing caused a crash landing on the Moon, Spacell achieved its aim of raising awareness among Israelis on space capabilities and inspiring young people to study natural sciences.



Photo: Spacell

# CEO STATEMENT

## Growth and development - for a sustainable world

“That’s one small step for man, one giant leap for mankind” were Neil Armstrong’s famous words as he first set foot on the Moon in July 1969. With this achievement the world demonstrated that the impossible was possible through determination, innovation and technology. Faith in the future grew as a result.

Fifty years have passed since the Moon landing and space is once again a source of inspiration. More affordable and advanced technology is making space accessible and our technology-driven and globally interconnected society is increasingly dependent on space-based services.

The pace of innovation is high, driven in part by the need to find ways to help meet some of humanity's key challenges — like climate change and sustainable use of resources.

### Business growth

SSC delivered positive returns on our core business in 2019 and we are reinvesting it in future sustainable growth. We signed several exciting contracts with customers globally and are increasing our range of services to meet needs of both institutional and commercial customers and to actively contribute to meeting the 17 Agenda 2030 goals. At the same time, geopolitical developments have led to greater uncertainty in the world. To a certain degree, this affects our ability to fully leverage market-growth potential.

### Espace and new space services for a sustainable world

Rapid increase in the number of satellites makes it possible to collect and measure more data on our planetary health. This data needs the correct infrastructure to be collected, processed and translated into information that can lead to concrete actions for the benefit of humanity.

Many such initiatives are already taken by the space sector. We are actively exploring these opportunities, seeking to promote both profitable business and contributing more directly to the global sustainability goals defined in Agenda 2030.

One example is Global Watch, a joint initiative between SSC, Luleå University of Technology and the private consultancy agency AFRY, aiming to provide a global situation overview on Earth by enabling qualified data management and processing. The possible end-user applications are endless, ranging from analyses of CO<sub>2</sub> emission data, deforestation, and other phenomena related to global warming to disaster preparedness - to mention just a few.



Esrange is essential to our contribution to the sustainability agenda. We are currently building a Testbed for Europe's next-generation sustainable rocket technology at Esrange with partial funding from the government. We have already received contracts for testing new engine technology when Testbed is operational in 2020.

There is a global shortage of launch capabilities. By establishing capability to launch small satellites from Esrange, we can contribute both to European competitiveness and societal sustainability and growth. Constructive discussions are ongoing with Government Offices regarding a partial investment on this capability.

An increase in satellites poses also challenges. Space debris and "dead" satellites in operation increase the risk of collisions, jeopardizing the ability to leverage future capabilities. That is why we need international regulation and transparent space traffic control. SSC is exploring the business case for a new role in this area in dialogue with international organizations such as the UN, EU and ESA.

As a provider of advanced space services in a global market we can contribute to a more open, equitable and just society. Our commitment to the United Nations Global Compact Initiative and its ten principles is an important foundation to achieving this.

Stockholm, May 2020

Stefan Gardefjord  
CEO

*SSC delivered positive returns on our core business in 2019 and we are reinvesting it in future sustainable growth*



# THIS IS SSC

SSC's mission is to help Earth benefit from space. Our vision is to be a leading global provider of advanced space services by 2023.

## SATELLITE GROUND NETWORK SERVICES - A GLOBAL NETWORK OF GROUND STATIONS

SSC operates one of the world's largest civilian networks of ground stations, providing access to satellites in virtually any orbit.

SSC's Ground Network comprises core SSC owned stations and collaborative

partner satellite stations strategically located around the world.

In many cases, the ground stations operate 24 hours a day, 365 days a year.

## SPACECRAFT OPERATIONS & ENGINEERING SERVICES – ADVANCED ASSIGNMENTS IN THE SPACE SECTOR

The Engineering Services Division provide engineering- and operations services to the international space market and support all project phases, from designing and testing through to launch and operations.

Covering the full mission range, SSC's expertise includes satellite operations

and engineering, ground segment operations and engineering, space engineering and scientific services, simulations and training.

In 2019, SSC strengthened its market position through the acquisition of Jade Aerospace in Germany.

## SCIENCE & LAUNCH SERVICES – ESRANGE SPACE CENTER

The Science Services Division offers launch services of sounding rockets and stratospheric balloons with scientific or technical instruments for research and technological development.

Since 1966, we have launched more than 570 sounding rockets and over 640

balloons from Esrange.

The launches are often carried out in collaboration with international customers. The division also provides development of experiment payloads.

SSC is a Swedish limited company owned by the Swedish state and is represented in eleven countries. At year-end SSC had 548 employees.

### Our assignment

SSC has both a societal and a commercial assignment.

The societal assignment consists of operating and developing Esrange Space Center and is measured against two objectives, utilization rate and quality index.

The commercial assignment consists of offering advanced space services on a global market, with profitability requirements from the owner.

### Objectives

Financial:

A minimum return of 6% on operating capital.

Capital structure:

The net debt/equity ratio shall over time be in the range of 0.3 to 0.5.

Societal:

Utilization rate at Esrange and a quality index, reported annually to the owner.

### 2019 performance

Net sales: SEK 1013 M (SEK 945 M).

Operating profit: SEK 30 M (SEK 47 M).

Cash flow from operations : SEK 195 M (SEK 134 M).

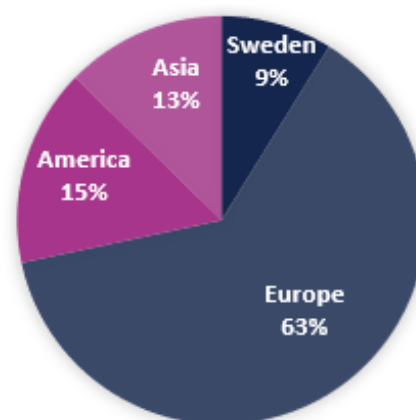
Investments: SEK 171 M (SEK 54 M).

Utilization rate at Esrange: 82%

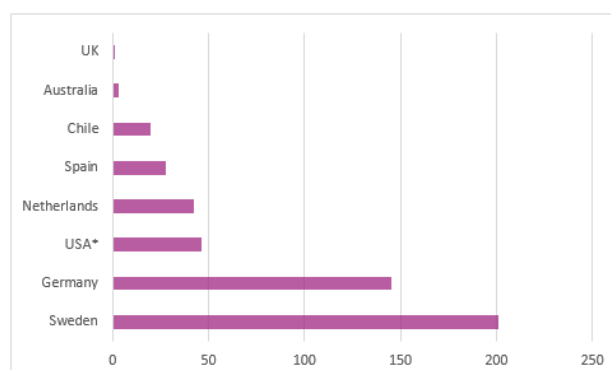
Quality Index: 96%

96%  
2019 Quality index

Revenues per geographical region



Average number of employees per country



# SSC GLOBAL PRESENCE



## Europe

SSC  
P.O. Box 4207  
SE-171 04 Solna  
Sweden

SSC  
Esrange Space Center  
P.O. Box 802  
SE-981 28 Kiruna  
Sweden

SSC  
LSE Space  
Argelsrieder Feld 22  
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Germany

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LSE Space  
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Germany

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SSC  
Autopista Los Libertadores  
Km 28, Peldehue  
Santiago  
Chile

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PO Box 94  
Mingenew, 6522 WA  
Australia

SSC  
Space Krenovation Park  
88 Moo Tambon Thung Sukala,  
Amphoe Siracha, Chonburi  
20230 Thailand



# EVOLVING SPACE LANDSCAPE

The space industry is in a period of rapid evolution. The development can be summarized in four areas, all of them beneficial for sustainable global development.

## Earth Observation



Photo: ESA

Satellites monitor the Earth's landmass, sea and atmosphere every day and images are getting more detailed. New technology also makes satellites and sensors less expensive. Advanced technology for processing large amounts of data, such as AI and Machine Learning, creates opportunities for new applications for supporting global sustainable development. The market for Earth observation data services is expected to grow exponentially.

## Positioning



Photo: SOS Alarm

Society already relies heavily on positioning services in order to function.

The importance of added-value services based on positioning data is expected to increase dramatically, from services that support sustainable cities to self-driving cars. Already today, value added services based on positioning data are estimated to USD 800 billion.

## Communications



Photo: OneWeb

Communications via satellites – such as television broadcasting and telecommunications – have previously been carried out with a few large satellites in geostationary orbit at a great distance from Earth. Thanks to technological advances permanent connectivity can be delivered, even to places where the internet has not been available. The introduction of 5G further enhances these possibilities.

## Space Exploration



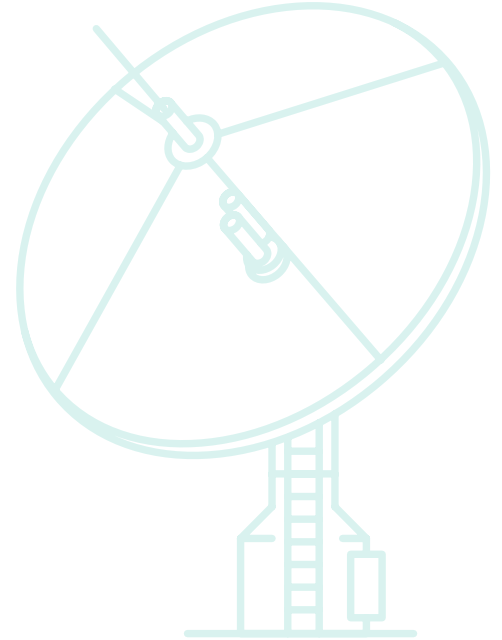
Photo: SpaceX

We see an era of entrepreneurship with more missions from both traditional and new players. This includes exploration of the far side of the Moon, space tourism as well as plans to reach Mars by 2030.

In addition to the desire to understand our planet and the universe, space exploration can contribute to sustainable solutions on Earth.

# STRATEGIC APPROACH

Our strategy is designed to deliver profitable, sustainable growth.



SSC delivers advanced space services on a global market, serving both institutional and commercial customers worldwide. Our customer base is growing as new countries, companies and organizations join the space industry.

The European Space Agency (ESA) is our largest customer, followed by the German space agency (DLR), NASA (USA) and a number of commercial customers. The Asian market continues to develop with new players and opportunities in several countries.

## Quality and availability are keys to value creation

SSC's responsibility is to deliver reliable services based on customers' expectations for quality and availability, using both standardised and tailored solutions.

Space can be leveraged to help humanity meet global challenges of our time. Data from space enables fact-based decision-making, which can contribute to more robust societies and greater resilience. High-quality service delivery from SSC can actively contribute to this.

## Opportunities and challenges

Keeping pace with global development is a key challenge for SSC in order to meet the future. Together with customers and partners, we continuously deve-

lop our competence, technology and services. The general geopolitical landscape may affect our ability to conduct business in certain countries and regions. On the other hand, space technology can be used to meet these challenges. Dialogue and international space collaboration can lead to exploring synergies and adapting common solutions.

To increase sales and market presence, we need to balance long and short-term priorities and tackle risks posed by geopolitical instability while fully embracing the opportunities which arise.

In doing this, strong innovation is a key. Other key areas for success is utilizing Esrange - already today one of the most versatile space centers in the world - to its full potential, as well as constantly developing quality of our services, by exceeding our customers' expectations.

## Security - part of our brand

The world faces increased security challenges, deriving from geopolitical instability, tensions and criminality. At the same time, space services increasingly become critical for important societal functions. To meet this development, SSC has since long made security as a part of our brand, continuously investing in high competence and measures covering the full domain from strategic security to detailed local solutions.

# SSC SUSTAINABILITY FRAMEWORK



## Business to foster sustainability

While adapting our business strategy to the fast moving space sector and changing conditions, our sustainability approach is focused to maximize long-term value for owners, customers, society at large and to our employees.

Based on this, the future-oriented materiality process and stakeholder analysis conducted in 2019 identified

the most relevant sustainability topics for success.

These were clustered into areas where we can create lasting value and where our impact on people and the environment are the biggest - as well success factors which can influence how SSC is perceived as accountable.

# FOCUS AREAS

for profitable, sustainable growth

As a global provider of advanced space services, we contribute in many ways to global sustainability efforts. By leveraging on our existing business, we seek to maximize our contribution to the global sustainability agenda.

Space is today integrated in our modern society and thereby part of our daily life. By delivering our services, SSC plays an important role in upholding these functions. We deliver data which is used to monitor sea levels, deforestation and many other important research areas related to global warming and climate change.

Through our sounding rocket and balloon programs at Esrange, we give access to space for scientists within various scientific fields. Our skilled engineers also take part in many important space missions beneficial to our societies.

## Innovation - Agenda 2030

Our goal is to be a leading player for creating innovative space services by 2025. Together with our customers and partners, we aim to create innovative space services that make a difference.

Several projects are ongoing, ranging from how to develop Esrange and how to utilize space data more efficiently to promoting sustainable use of space.

## Esrange to foster sustainability

Esrange is among the most versatile space centers in the world. By further developing the capability at Esrange to meet the global space sector's needs, we can increase our contribution substantially.

## 2019 performance

- SSC set up a group function to realize innovation that contributes to sustainable development.
- *Global Watch Center*: Together with Luleå University of Technology and the consulting firm AFRY, we presented a feasibility study on how to use advanced digital technology in Earth observation data processing and analysis. The project continues in 2020.
- *Testbed - Testing facility for next generation sustainable rocket technology*: Construction of the site started in 2019, to be finalized in 2020.
- *SmallSat Express - Developing small satellite launching capability at Esrange*: Further steps taken to realize the plan, including a business plan showing great potential for both profitability and societal benefits.
- *SubOrbital Express - Microgravity rocket flights as a commercial service*: Successful first flight in 2019. Easier and more cost-efficient access to space for researchers as well as other customers who want to send something to space.
- *SSA - Space Situational Awareness*: Service development on how to contribute to international Space Situational Awareness and Space Traffic Development.

### High quality delivery of space services

By maintaining and continuously develop the quality of our services, we can develop new services in close co-operation with customers and partners and maximize our value creation.

The results of our customer surveys show that we are on the right track. One example is the customer satisfaction index of 96 percent for the societal assignment at Espace. Other indicators also point in the same direction.

### Managing sustainability risks

The world is increasingly complex, while the space industry is rapidly evolving. This requires robust processes to assess negative and positive impacts of our business on the well-being of individuals and society as a whole.

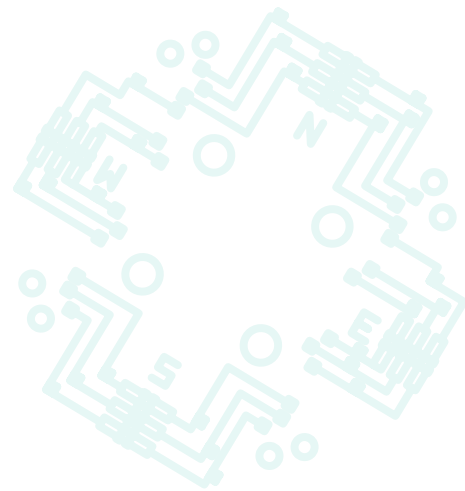
Most important sustainability risks are security/cybersecurity, market and business ethics (including human rights), and sustainable supply chain.

Through our Sustainable Business Analysis (SBA), now implemented for both Sales and Procurement, these risks are being addressed in a systematic way.

Within this process, sustainability criteria such as human rights, export control and overall security priorities are considered.

### Addressing our carbon footprint

We are working actively to reduce our negative climate impact. Over the years, substantial efforts have been made at Espace. We will continue to address other domains, such as business travel and energy use at ground stations globally.



## Contributing to Agenda2030

Space sector contributes to most of the global sustainability goals defined in Agenda 2030. We identified the goals most relevant for our contribution, linking these to our strategy for profitable, sustainable growth. Operating on a fully global market, we can use our position to strengthen collaboration and to leverage on the opportunities, and thereby contribute to the goals. Based on this, we will focus on the following Agenda 2030 goals:



Take action to combat climate change and its consequences.

How to increase our contribution:  
By creating innovating services that contribute to climate action, establishing satellite launching capability at Espace and by exploring new service segments such as processing and analyzing Earth observation data.



Transparency and strong institutions: Promoting peaceful and inclusive societies for sustainable development.

How to increase our contribution:  
By providing space-based services that increase access to transparent information and strengthen institutions working for the sustainable use of space. For example, by exploring new services within Space Situational Awareness.



Global Partnership for Sustainable Development.

How to increase our contribution:  
By creating projects together with customers or other actors where we can use each other's skills and create new services that contribute to all Agenda2030 goals.

# EMPLOYEES - OUR GREATEST ASSET

**548**  
employees

**25**  
nationalities

**11**  
countries

## Diversity - both a challenge and a main asset

SSC is a service company whose operations require high levels of competence. We also aim to be a company with courageous leaders and with an inclusive corporate culture.

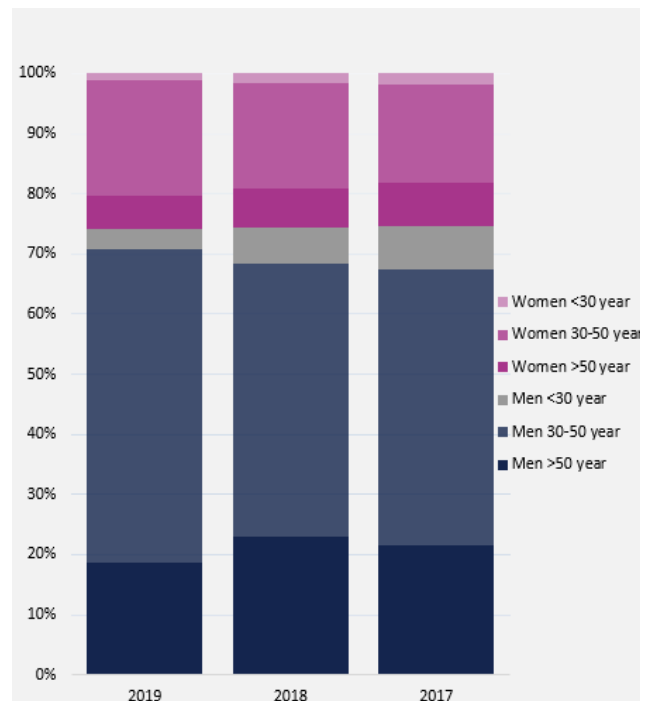
SSC is growing and needs new competences to take on the future. Our priorities for creating an attractive workplace is to focus on leadership and collaborative culture, innovation and new thinking.

In a global organization, diversity is an asset that allows us to increase collaboration across the company. Since space is traditionally a highly male-dominated sector, we are taking action to promote a shift to greater gender equality.

Our Global Leadership program has engaged most managers and key staff, providing skills necessary to keep up with the speed of change in the space industry. Since many years, we promote the 'Tekniksprånget', a program initiated by the Royal Swedish Academy of Engineering Sciences (IVA).

In 2019, SSC initiated a Space Career Program, to attract new talents to drive future technical project management.

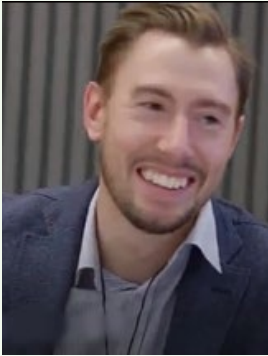
## Employees, as per age and gender



All staff has participated in our Global Diversity Training Program, which now continues to be driven by our employees. Based on the evaluation, employees perceive our international environment as an asset and that the program has promoted cooperation within SSC.

# MEET OUR PEOPLE

Philip Pålsson



**"This is an exciting time to be part of the industry"**

As one of two space centers in Europe, Esrange has no plans to slow down. Currently, construction of New Esrange is in full swing, including a new modern Testbed for rocket engine and stage tests. Philip Pålsson is Project Manager for New Esrange.

*"It is an exciting time to be part of this organization and the space industry as a whole – a lot is happening very quickly and the customer demands are growing fast. I'm responsible for the future development of Esrange, to find new ways of utilizing Esrange and combine current services to invent new ones. That includes, for example, finding new ways to make use of the unique touch-down area that surrounds our space center."*

Filipa Correia



**"I have always been in love with all kinds of aircraft"**

With a long history dating back to the 50's, SSC has been part of historical space missions, including the Apollo Moon programs. Filipa Leonor Correia works as a Spacecraft Controller in Oberpfaffenhofen, Germany.

*"I have always been in love with all kinds of aircraft and the idea of freedom and going beyond borders that they convey. Before SSC, I worked as an aircraft engineer but my eagerness for the space field was also there. So one day, when I was told that there were several opportunities to join SSC, I just took the chance. My main role at SSC is to monitor and control constellation spacecraft. This includes execution of daily standard procedures and other planned activities that ensure and maintain the constellation in a healthy status, or that detect that something may not be nominal."*

Darren Charrier



**"I want to make as big of an impact as possible"**

Space missions of all kinds are a natural part of SSC operations, and ground stations are required for every single one of them. Darren Charrier works as a Solutions Architect in San Diego, US.

*"My goal is to make as big of an impact on the Space industry as possible. In my lifetime humans will colonize the Moon and Mars and I am determined to make that happen. We are currently in the most transformative period of space exploration, and I am incredibly passionate about it. At SSC I work as a solutions architect, being the liaison between the intense rocket science required for our work and the world of sales and marketing that brings our services to the industry. Currently I am working on everything from supporting companies that are going to the Moon and building space robots to supporting our marketing and sales team in communicating the amazing work we do."*



[sscspace.com](http://sscspace.com)