



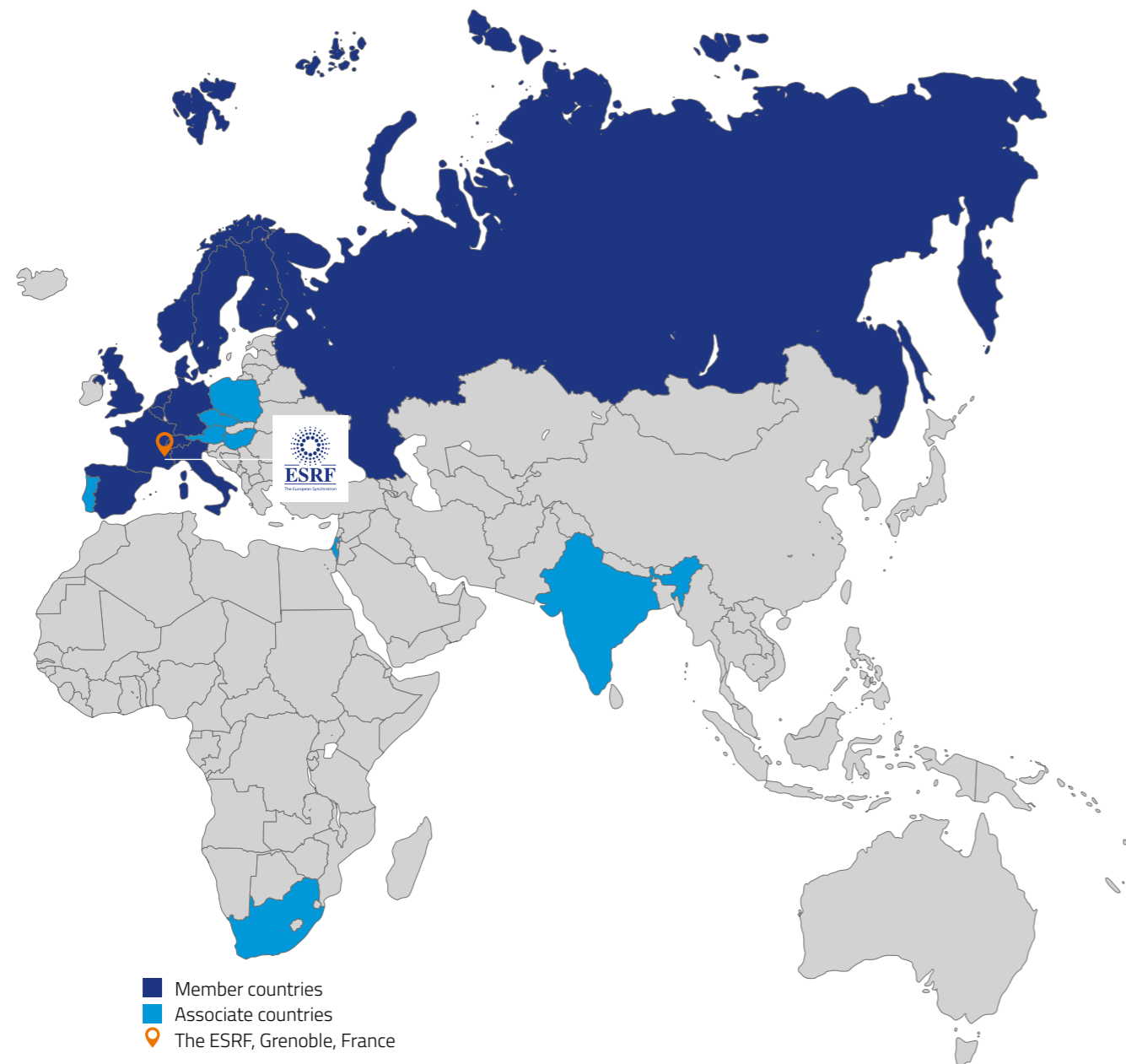
**ESRF - Extremely Brilliant Source**

# BENEFITS TO SOCIETY

## This is the ESRF

The ESRF is a landmark for fundamental and innovation-driven research, providing scientists from all over the world with the most brilliant X-rays to unveil the structure of materials and the mechanisms of life, down to atomic resolution. By pushing the boundaries of knowledge and spurring innovation, the ESRF fosters international collaboration and brings people together, while training the next generation of scientists and engineers. These activities place the ESRF in a unique position to successfully contribute to the well-being of society, lighting the way to a brighter, sustainable and peaceful future.

### A POWERHOUSE OF INTERNATIONAL COLLABORATION



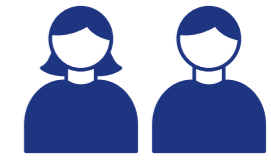
## ESRF FACTS AND FIGURES



Founded in  
**1988**



**21**  
partner countries



**700**  
staff from more than  
**40** countries



**9 000**  
users  
each year



**2 000**  
scientific publications  
each year



**30%**  
of research carried out  
with industrial partners

### ESRF MEMBER AND ASSOCIATE COUNTRIES

#### Member countries



France	27.5%	Russia	6.0%	Nordsync	5.0%
Germany	24.0%	Benesync	5.8%	(Denmark, Finland, Norway, Sweden)	
Italy	13.2%	(Belgium, The Netherlands)		Spain	4.0%
United Kingdom	10.5%			Switzerland	4.0%

#### Associate countries



Israel	1.75%	India	0.66%
Austria	1.75%	Czech Republic	0.6%
Poland	1%	South Africa	0.3%
Portugal	1%	Hungary	0.25%

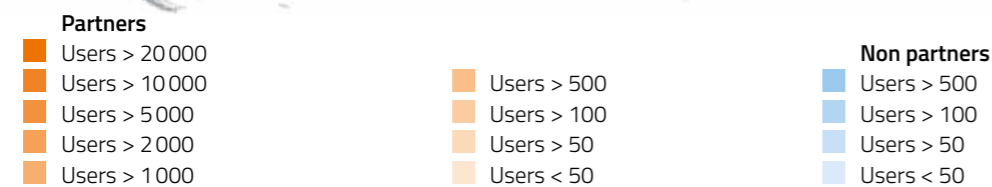
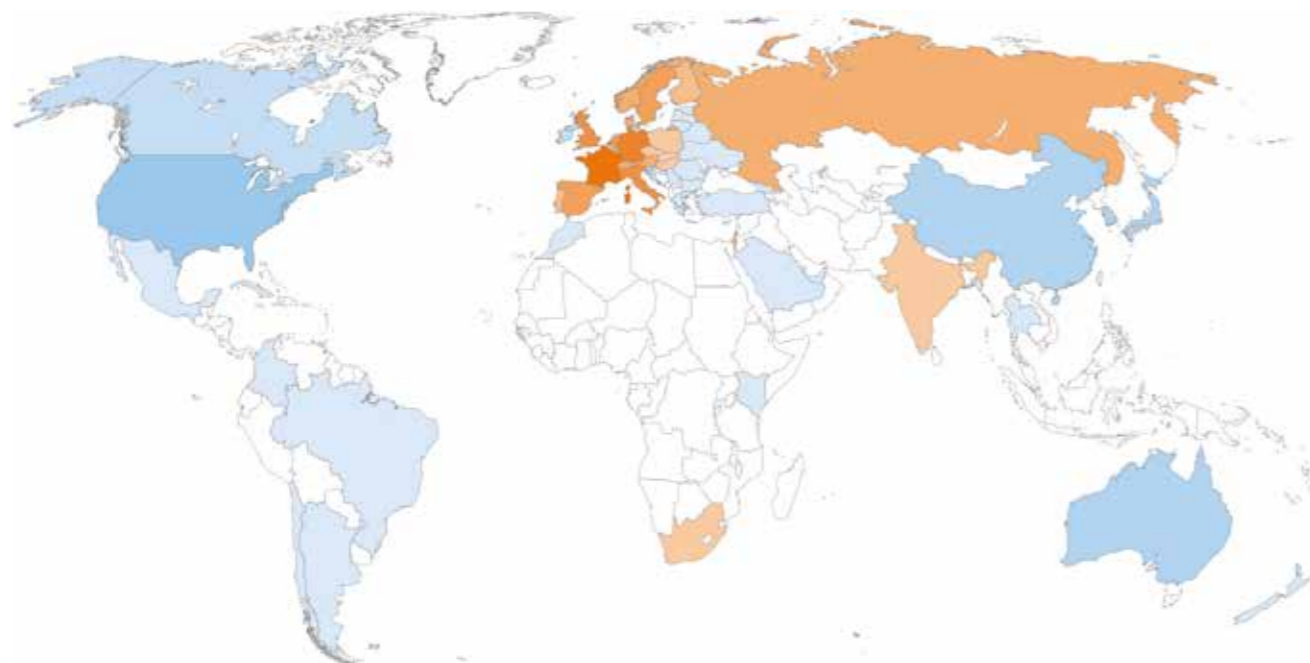
## Advancing science for more than 30 years

For more than 30 years, the ESRF has enabled major scientific breakthroughs in the understanding of living and condensed matter. Scientists from all over the world access beamtime on the basis of scientific excellence. With its new Extremely Brilliant Source, the ESRF is opening new vistas for X-ray science, providing a growing community of users with unique facilities to tackle the complex global challenges facing our society, such as health, clean energy and climate change. The ESRF aims to continue its outstanding contribution to science in the next decade and beyond.

### The EBS scientific pillars

- Health innovation, overcoming disease and pandemics
- Materials for tomorrow, innovative and sustainable industry
- Clean energy transition, sustainable energy storage and clean hydrogen technologies
- Planetary research and geoscience
- Environmental and climatic challenges
- Bio-based economy and food security
- Humanity and world cultural heritage

158 000 USERS FROM MORE THAN 60 COUNTRIES SINCE 1994



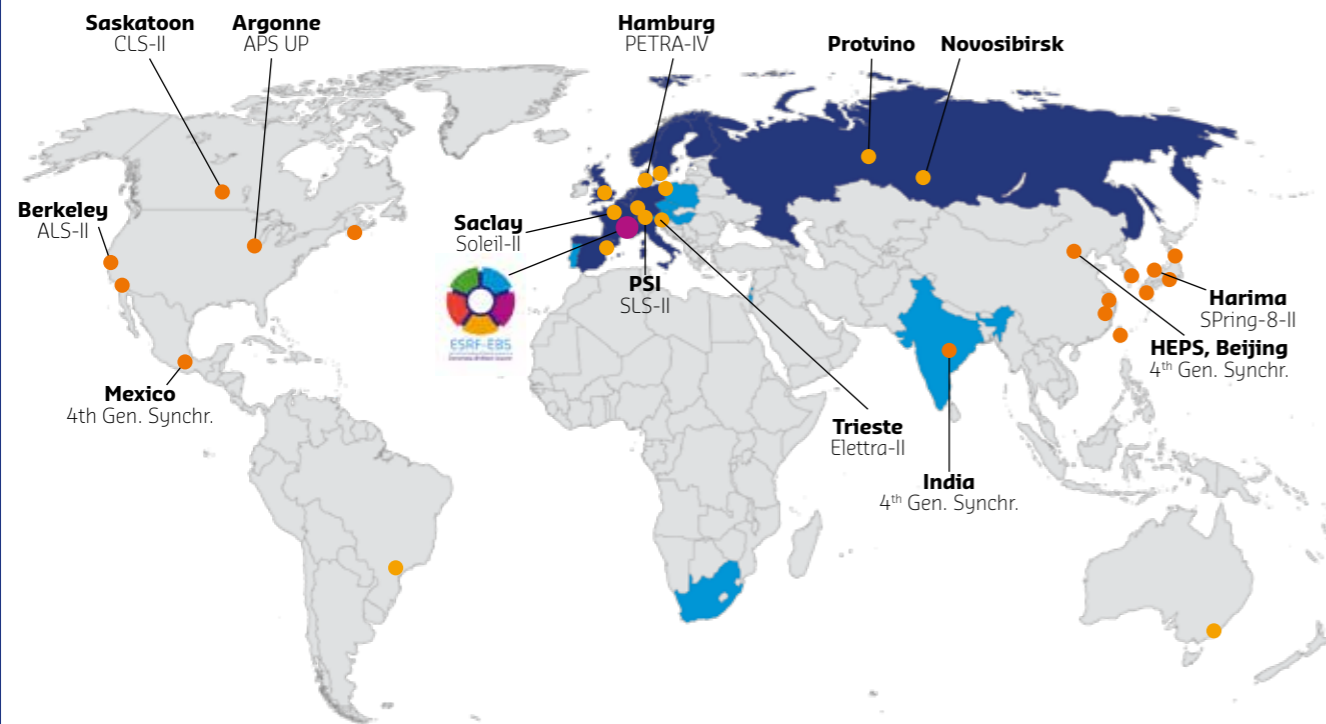
Map based on statistics 2010-2020



## Pushing the boundaries of X-ray technology

From making history in 1988 as the world's first third-generation synchrotron, to launching its Upgrade Programme in 2009, including the first of a new generation of high-energy light sources in 2020, the strength of the ESRF is its capacity to invent, innovate, push technology to the limits and seek ever-higher performance, with the constant goal of serving the scientific community from its member countries and beyond. The ESRF invented, engineered and now operates the Extremely Brilliant Source, which has become a new standard for synchrotron light sources, inspiring many similar new constructions and upgrades around the world.

### SYNCHROTRON PROJECTS WORLDWIDE BASED ON ESRF-EBS TECHNOLOGY




■ Member countries  
■ Associate countries



**500 M€**  
invested in an  
**innovative upgrade programme**  
over 2009-2022

**15**  
**synchrotron light source concepts and projects**  
based on EBS lattice design



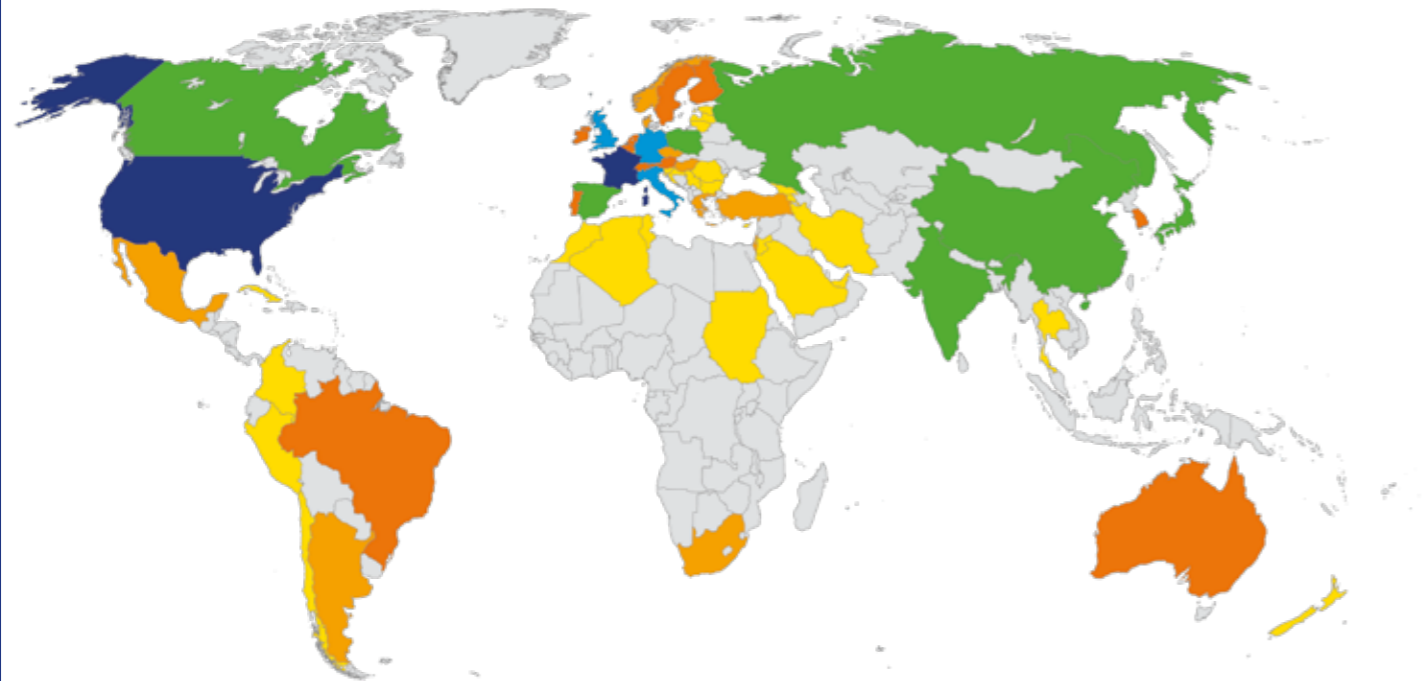
**500**  
**ESRF staff**  
continuously enhancing the performance of the storage ring, the beamlines and instrumentation

**Pioneering synchrotron radiation technology**  
environmentally friendly permanent magnets, advanced vacuum chambers and power supply systems, and new concepts for x-ray optics and mechatronics for beamlines

## Fostering international collaboration

The ESRF is a prime example of successful international collaboration: a hub for scientific excellence in line with UNESCO objectives and the Horizon Europe research programme, attracting the best minds worldwide in X-ray science and serving a growing international community. By bringing countries together to develop challenging projects and to accomplish feats that no one country can achieve alone, the ESRF has accumulated best practices, knowledge and expertise that have been propagated across the global synchrotron community, raising standards around the world.

TOP UNIVERSITIES PER COUNTRY INVOLVED IN RESEARCH PROJECTS ACCEPTED AT THE ESRF AFTER PEER-REVIEW, OVER 1995-2020



- Universities > 100
- Universities < 100
- Universities < 50
- Universities < 25
- Universities < 10
- Universities < 5

**19**  
on-going  
international  
projects

funded by  
other organisations,  
such as ANR (France), BMBF  
(Germany), Chan Zuckerberg  
Initiative (USA)

**52**  
high-level  
projects

funded by  
the European Commission  
(through FP7 and H2020),  
9 of which are  
coordinated by  
the ESRF

Founding member  
of **EIROforum**  
which brings  
together eight of  
Europe's Big  
Science facilities

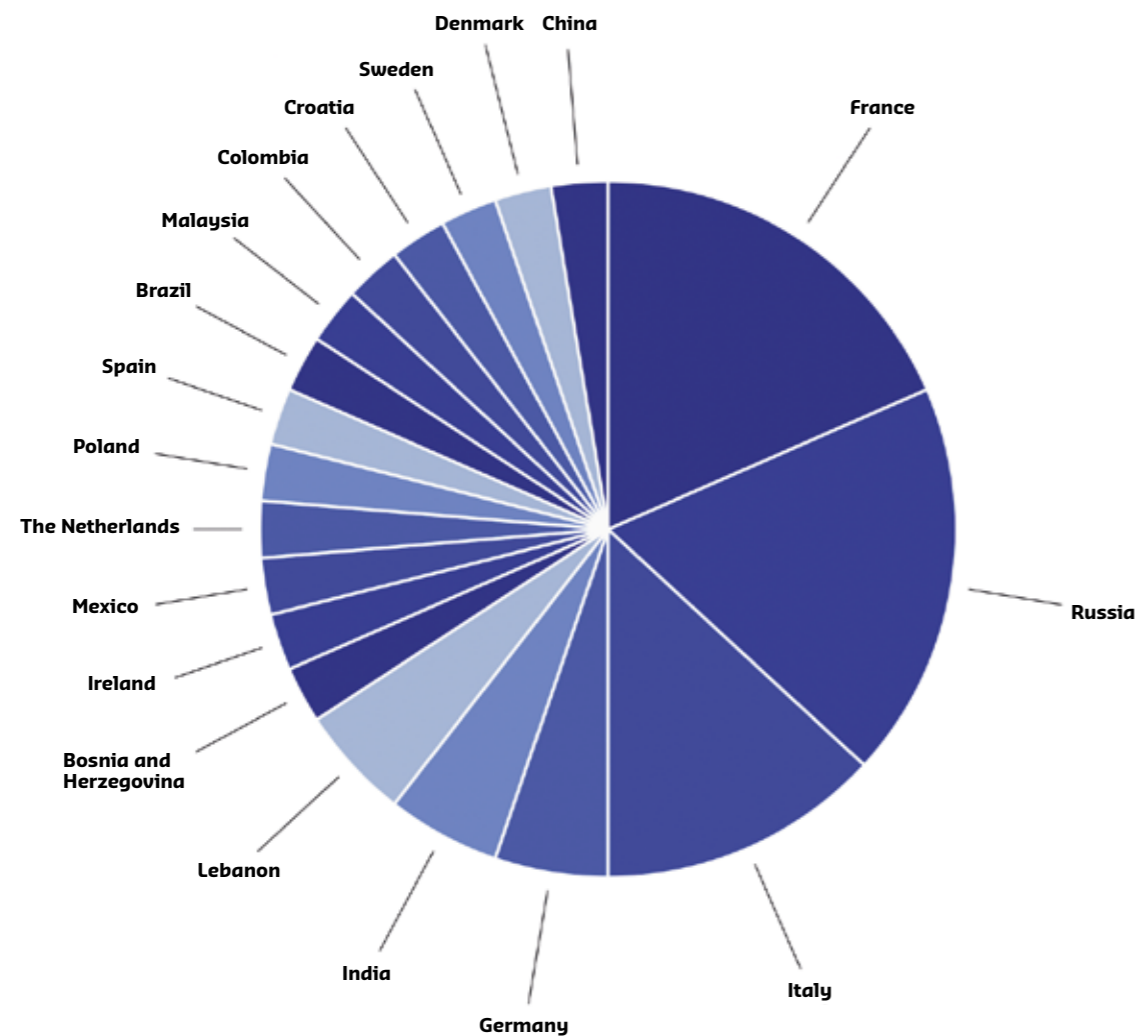
Founding member  
of **LEAPS**  
the League of European  
Accelerator-based  
Photon Sources

Founding member  
of the **African  
Lightsource  
Foundation**

## Inspiring and training the next generation

The ESRF provides a unique and vibrant setting for early-career scientists, engineers and technical staff to train and develop their scientific and technical abilities, thus driving the transfer of expertise to other research projects, to industry and to society at large. The ESRF also supports many initiatives aimed at fostering an interest in science and technology, engaging with a diverse range of audiences including school students and young children.

DISTRIBUTION OF ESRF PHD STUDENTS PER COUNTRY IN 2021




**505**  
post-doctoral  
researchers

trained at the ESRF  
from almost 50 countries  
since 1988

**319**  
postgraduate  
students

trained at the ESRF  
from almost 50 countries  
since 1988

  
**2400**  
students

trained through  
the HERCULES European  
school (1991-2021)  
and the ESRF-ILL  
Summer School  
(2015-2021)

**1 500**  
high-school  
students

each year within the programme  
**Synchrotron@School**

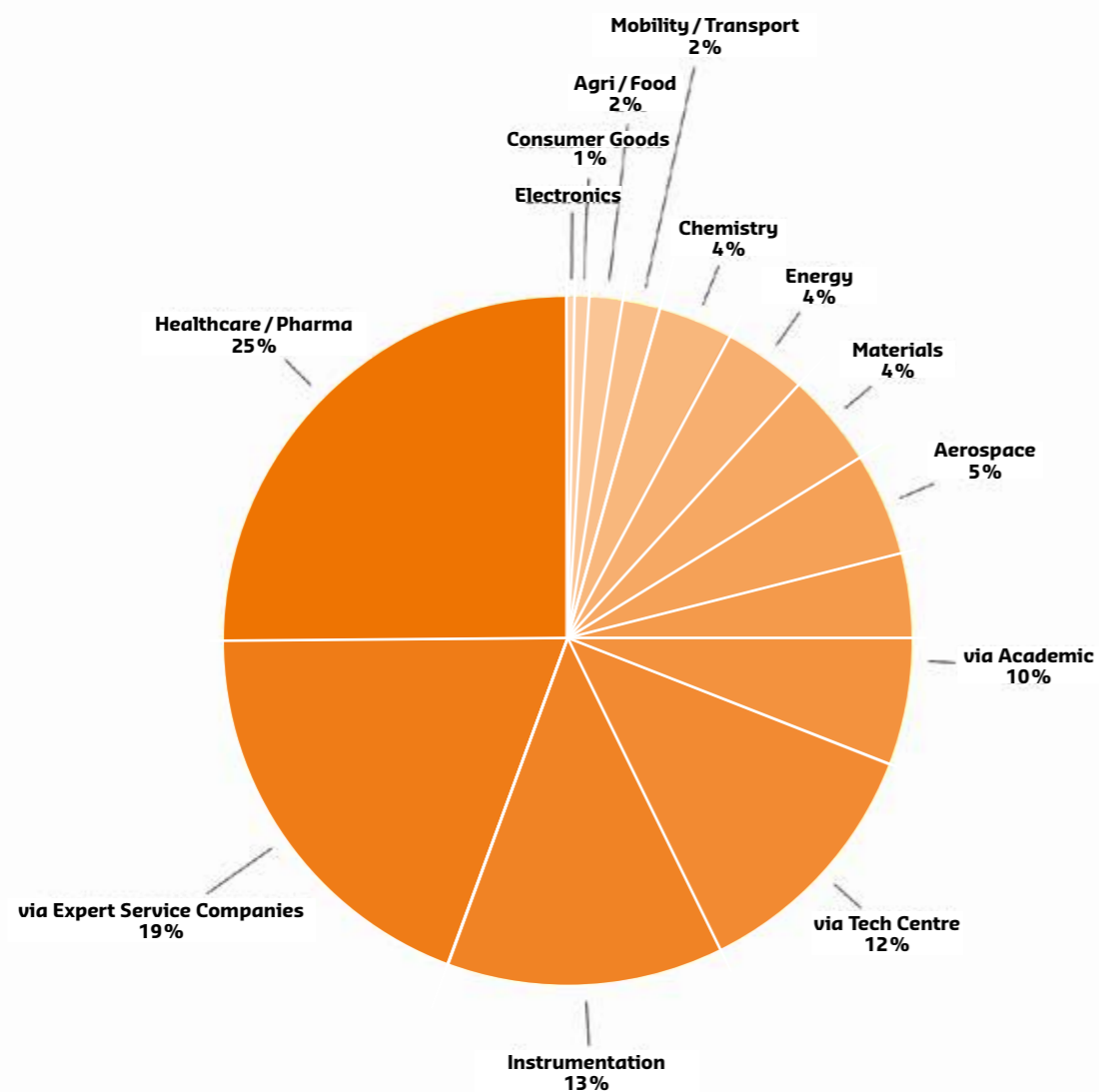
**260**  
trainees

over the last five years

## Driving innovation and economic growth

Promoting scientific excellence and pioneering ambitious projects require the development of advanced instruments and new technologies, making the ESRF and collaborating institutes and laboratories proud drivers of innovation. This brings tremendous benefits to society through knowledge transfer and increase in expertise, and also drives strong economic returns at regional, national and international levels.

ESRF INDUSTRIAL ACTIVITY BY SECTOR (IN 2018)



**cumulative commercial income** over the past 15 years



**have used the ESRF for their R&D** since 1994



**technology licences** with companies



placed with suppliers per year for a total of **52 M€**



on ESRF's procurement database since 2008



of ESRF's budget is invested into contracts with industry in its **member and associate countries**



of ESRF's budget is invested into contracts with companies located in the French region **Auvergne Rhône Alpes**

## Acting for a sustainable future

As a landmark for science rooted at the heart of the French Alps, the ESRF is strongly committed to demonstrating its engagement and integration with society by constantly improving its social, economic and environmental impact. Identifying and implementing best practices and procedures to reduce the ESRF's carbon footprint, and thus to help mitigate climate change, are strong factors in decisions being made at the ESRF in the short, medium and long term.







**ESRF, THE EUROPEAN SYNCHROTRON**

71 avenue des Martyrs, F-38043 GRENOBLE Cedex 09 - France  
@esrfsynchrotron

[www.esrf.eu](http://www.esrf.eu)