

## Press release

Embargo: 14.05.2019, 8:30

### 04 National Economy

Research and development in Switzerland 2017

## CHF 22.6 billion dedicated to research in Switzerland in 2017

**Switzerland dedicated CHF 22.6 billion to research and development (R&D) in 2017, 2% more than in 2015, the year of the last survey. Enterprises remained the main producers of research accounting for more than two thirds of expenditure. They nonetheless curbed their expenditure contrary to higher education institutions. These are the main findings from the surveys carried out by the Federal Statistical Office (FSO) on research and development.**

The various stakeholders in Switzerland dedicated CHF 22.6 billion in 2017 to their own R&D activities. Enterprises invested CHF 15.6 billion, i.e. more than two thirds of the total while higher education institutions spent 6.2 billion, accounting for more than a quarter of the total amount.

Over the past 9 years, growth in R&D expenditure has slowed. Between 2008 and 2012, the annual average rate was 5% and then fell to 3% between 2012 and 2015 before reaching 1% for the period from 2015 to 2017. However, the total expenditure amount has continued to increase over the years, with new records seen in every survey.

#### Stagnation of enterprises, increase for higher education institutions

For the first time in 20 years, R&D expenditure of enterprises fell slightly (-11 million, i.e. a decrease of less than 0.1%) compared with the previous survey (2015). The expenditure of large enterprises (100 employees and over) declined (-2%) while that of smaller enterprises rose (between +13% and +16% depending on the size). The pharmaceutical industry alone accounted for one third of R&D expenditure of private enterprises and remains a key player in research in Switzerland.

The increase in the total amount of R&D expenditure in Switzerland can be attributed to the increase in expenditure from the higher education sector which, as in previous periods, continued to increase (+ CHF 332 millions, +6% compared with 2015).

#### Intensity of R&D still high in Switzerland

Research expenditure represents 3.4% of the gross domestic product in Switzerland. This ratio which measures the intensity of research in the country's economy is very high in international comparison. Switzerland is in third place, behind South Korea and Israel, according to the figures from the OECD.

### **Continued increase of basic research**

Since 2012, basic research has gained increasing importance in Switzerland. Higher education institutions are traditionally active in this field. For the past five years, however, basic research has been driven by the increase in higher education institution expenditure but in particular by a very substantial increase within private enterprises. Thus in 2017, over 40% of R&D expenditure from the latter was dedicated to basic research. Previously, this type of research only accounted for one quarter of R&D expenditure.

### **Key role of the state in R&D funding**

The state sector – which is made up of the Confederation and the cantons – carries out few research activities. Its expenditure accounted for less than 1% of the total. In contrast, the state assumes a far more important role in terms of funding, particularly for higher education institutions. In 2017, higher education institutions received almost CHF 5 billion from the cantons and the Confederation for their R&D activities.

### **Cross border financial flows**

As with economic flows, the funding of R&D activities also involves a lot of interaction with abroad. In 2017, CHF 1.2 billion from abroad financed R&D activities carried out in Switzerland compared with CHF 2.3 billion in 2015.

Four fifths of this amount benefited enterprises and 20% financed R&D activities in the higher education sector. At the same time, enterprises in Switzerland financed R&D activities (often in the form of contracts) to the amount of almost CHF 7.9 billion, an increase of more than 40% compared with the previous survey.

### **More researchers and women among R&D personnel**

In 2017, R&D personnel in Switzerland remained stable, accounting for approx. 125 000 persons (almost 82 000 jobs in full-time equivalents – FTEs). R&D personnel mainly consisted of researchers (46 000 FTEs) with the number of women gradually increasing. In 2017, 36% of R&D personnel were female compared with 32% in 2008.

## Statistics on Swiss R&D

The statistics on Swiss R&D are composite statistics: this means that they bring together the various sources of information available to give a statistical picture of the R&D activities conducted in Switzerland that is as complete as possible. This covers R&D funding as well as R&D personnel. R&D is carried out in four sectors: the business enterprise sector, the Confederation sector, the higher education sector and the private non-profit sector (PNP).

Data on the **business enterprise** sector come from a questionnaire survey of businesses active in R&D.

Data on the **Confederation's** R&D expenditure are gathered by means of a statistics module belonging to the Confederation's ARAMIS information system (Administration Research Actions Management Information system).

Information on the **higher education sector's** R&D expenditure and personnel come from various sources. For the universities (UNI) - including the federal institutes of technology (EPF/ETH) - , the universities of applied sciences (UAS) and the universities of teacher education (UTE), it concerns administrative data from the Swiss university information system (SIUS). Data on the research institutes within the EPF/ETH domain comes from information gathered by ARAMIS.

There is no survey to gather data on the **private non-profit sector** (PNP). R&D data for this sector is obtained by means of estimates especially carried out by the FSO.

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## Information

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## New publication

Available in German and French:

Forschung und Entwicklung in der Schweiz 2017, FSO number: UST: 139-1701-05, price: CHF 10.10

Recherche et développement en Suisse 2017, FSO number: 139-1702-05, price: CHF 10.10

Publication order, tel.: +41 58 463 60 60, email: [order@bfs.admin.ch](mailto:order@bfs.admin.ch)

## Online

Further information and publications: [www.bfs.admin.ch/news/en/2018-0468](http://www.bfs.admin.ch/news/en/2018-0468)

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## Access to results

This press release has been established on the basis of the European Statistics Code of Practice, which ensures the independence, integrity and accountability of national and community statistical offices. Privileged access is supervised and under embargo.

The contents of this press release as well as the relevant information for the press conference were made available to those taking part 15 working days before the press conference.

**T1 Intra-mural R&D expenditure of private enterprises by enterprise size, from 2008 to 2017**

In CHF million at current prices and average annual rate of change as %

<b>Intramural R&amp;D expenditure</b>	<b>2008</b>	<b>2012</b>	<b>2015</b>	<b>2017</b>
Small enterprises: 10-49 employed persons <sup>1</sup>	1 236	1 600	1 253	1 449
Medium enterprises: 50 to 99 employed persons	637	805	941	1 063
Large enterprises: 100 employed persons or more	10 105	11 870	13 466	13 137
<b>Total</b>	<b>11 979</b>	<b>14 276</b>	<b>15 660</b>	<b>15 649</b>

<b>Average annual rate of change</b>	<b>2012</b>	<b>2015</b>	<b>2017</b>
Small enterprises: 10-49 employed persons <sup>1</sup>	7%	-8%	8%
Medium enterprises: 50 to 99 employed persons	6%	5%	6%
Large enterprises: 100 employed persons or more	4%	4%	-1%
<b>Total</b>	<b>4%</b>	<b>3%</b>	<b>-0,04%</b>

<sup>1</sup> In the "Research and development" sector, the size class "10-49 employed persons" has expanded and includes "1-49 employed persons"

Source: FSO - Research and development (R&amp;D) in private enterprises (private RD)

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**T2 R&D personnel by function, from 2008 to 2017**In FTE<sup>1</sup> and average annual rate of change as %

	2008	2012	2015	2017	Average annual rate of change		
					2008-2012	2012-2015	2015-2017
Researchers	25142	35785	43740	46088	9%	7%	3%
R&D technicians	21763	21484	24352	22152	0%	4%	-5%
R&D supporting staff	15161	18208	13359	13512	5%	-10%	1%
<b>Total</b>	<b>62066</b>	<b>75476</b>	<b>81451</b>	<b>81751</b>	<b>5%</b>	<b>3%</b>	<b>0%</b>

<sup>1</sup> FTE: Full-time equivalents

Source: FSO - Research and development (R&amp;D) Swiss synthesis (Swiss RD)

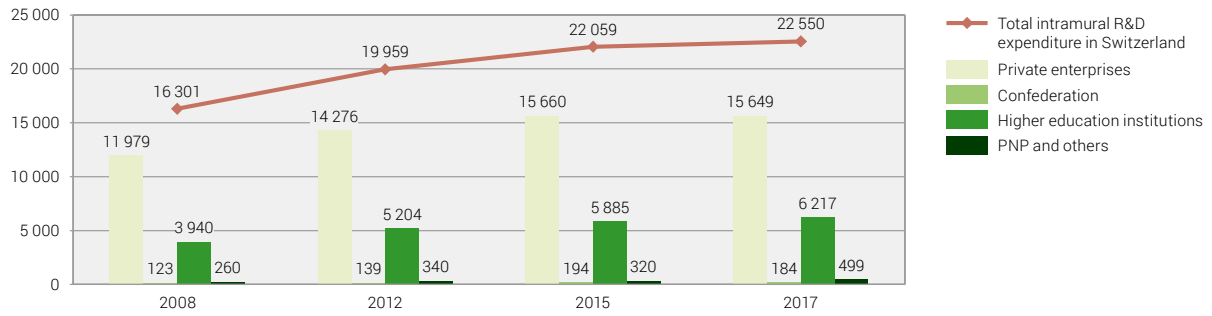
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### Intra-mural R&D expenditure by sector of economic activity, 2008 to 2017

In CHF million at current prices

G1



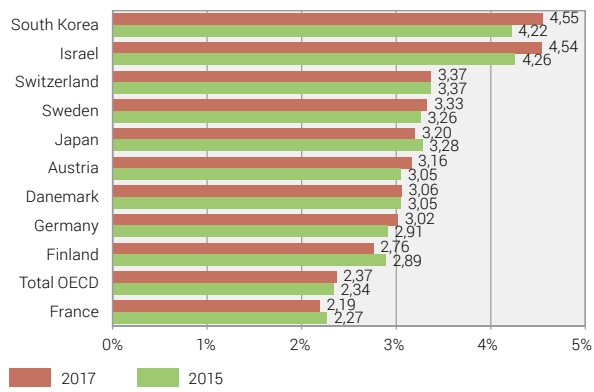
Source: FSO – Research and development (R&D) Swiss synthesis (Swiss RD)

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### R&D intensity, international comparison, 2015 and 2017

As % of GDP

G2



Sources: OECD – MSTI database, March 2019; FSO – Swiss RD

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