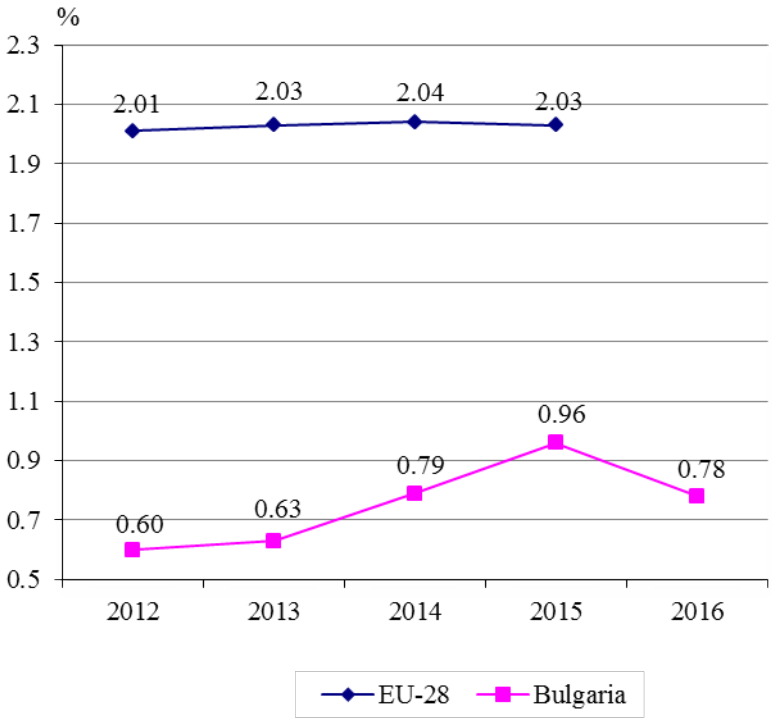
# RESEARCH AND DEVELOPMENT ACTIVITY IN 2016 (PRELIMINARY DATA)

In 2016, the total amount of expenditure on research and development activity (R&D) was 734.0 million BGN which was 13.7% less than the previous year.

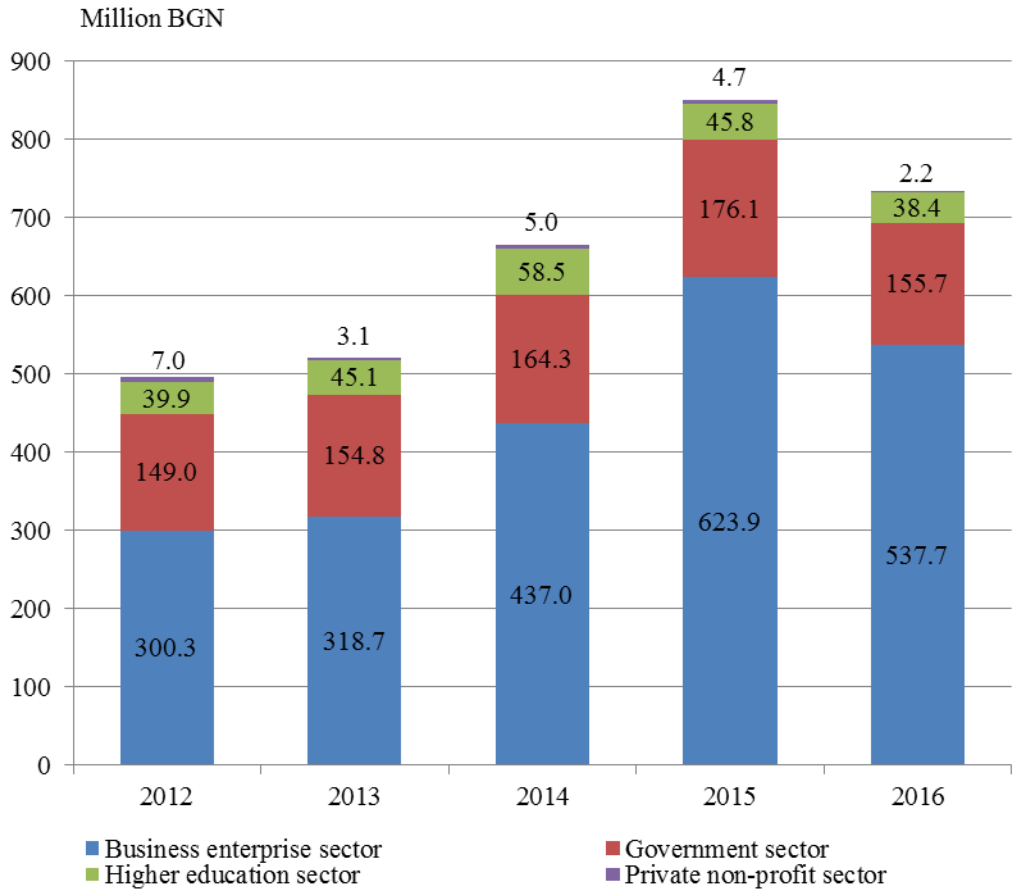
R&D intensity (R&D expenditure as % of GDP) also decreased in comparison with the previous year - from 0.96% in 2015 to 0.78% in 2016 (Figure 1).

**Figure 1. R&D expenditure as a percentage of GDP**



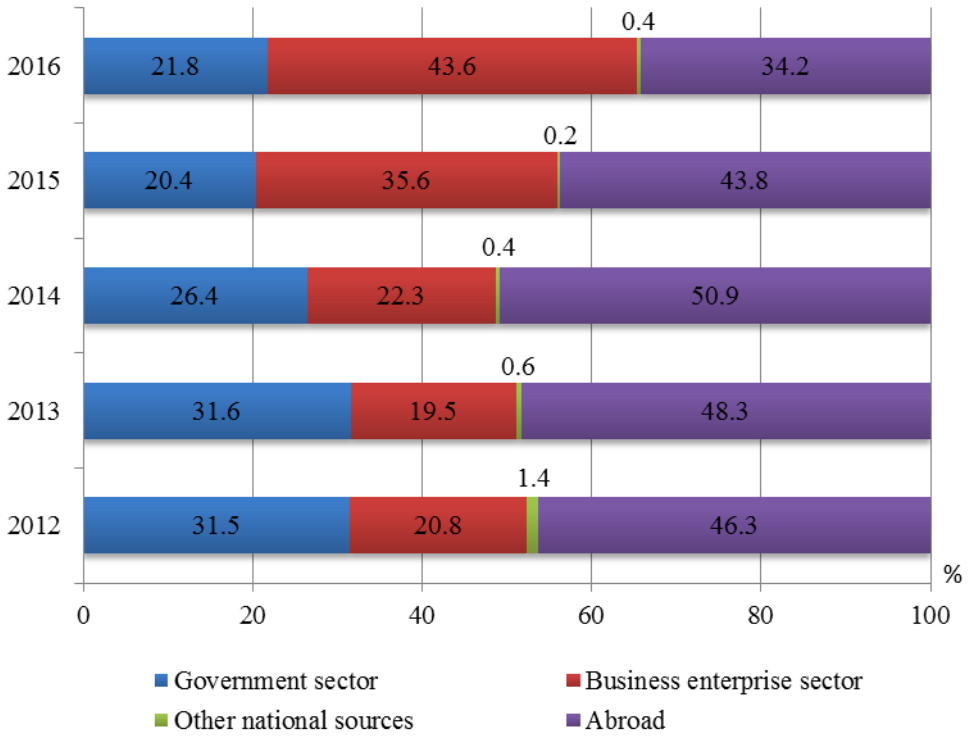

The decrease in total R&D expenditure in 2016 compared to the previous year was mostly due to the business enterprise sector where R&D expenditure decreased by 86.2 million BGN or by 13.8%. The business enterprise sector continues to be the largest of the four institutional sectors of R&D performance with a share of 73.3% of the total R&D expenditure. It was followed by the government sector, higher education sector and private non-profit sector with share of respectively 21.2%, 5.2% and 0.3% (Figure 2).

**Figure 2. R&D expenditure by institutional sectors**



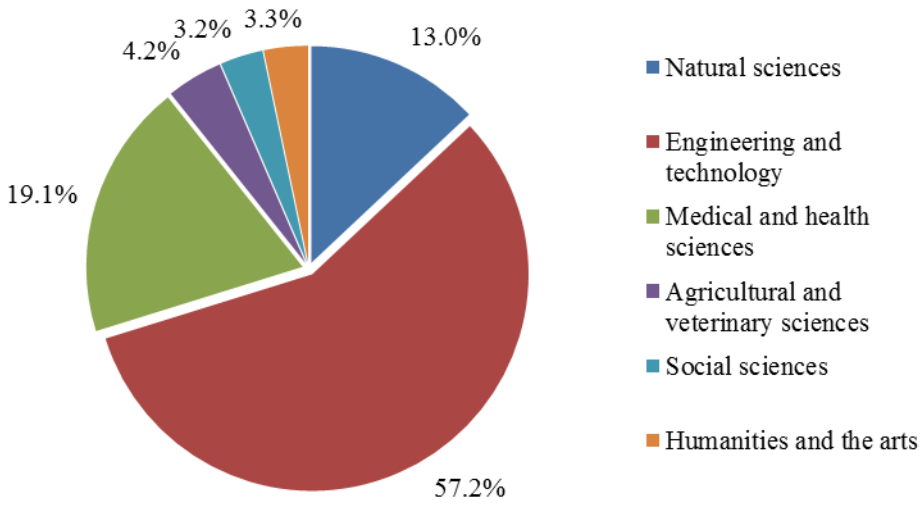

The R&D activity was financed from the state budget, businesses, other national sources and from abroad (Figure 3). In 2016, the largest was the share of R&D funds coming from the business enterprise sector - 43.6%. They increased by 5.7% compared to the previous 2015 (from 302.6 million BGN to 320.0 million BGN). Compared to 2015, the funds from foreign sources for R&D decreased by 32.7% (from 372.9 million BGN to 250.9 million BGN).

**Figure 3. Structure of R&D expenditure by source of funds**




In the structure of R&D expenditure by fields of science, the highest share belonged to technical sciences - 57.2% or 419.5 million BGN, followed by medical and health sciences with a share of 19.1% (140.3 million BGN) and the natural sciences - 13.0% (95.6 million BGN) (Figure 4).

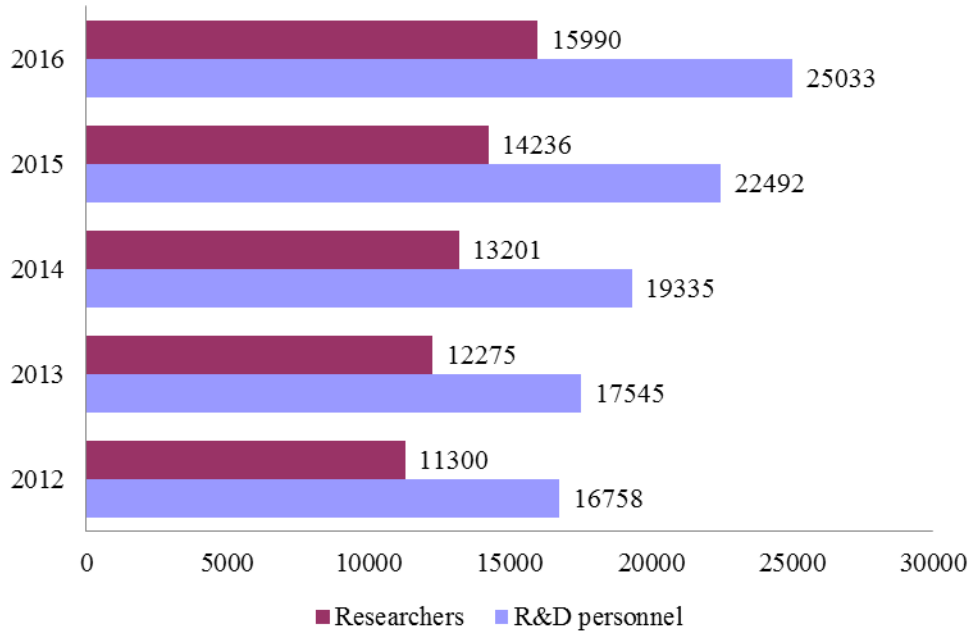
**Figure 4. Structure of R&D expenditure by fields of science, 2016**




In 2016, the personnel employed with research and development activity amounted to 25 033 persons (in full-time equivalent), which was 11.3% more than in the previous year (Figure 5). The share of women in total R&D personnel was 47.6%, as the difference in the level of employment between genders was 4.8 percentage points in favor of men. The number of researchers also increased by 1 754 persons or by 12.3% compared to 2015.

As in 2015, the main part of scientific staff is concentrated in companies and research institutes in the business enterprise sector - 44.8% of the total staff (in full-time equivalents) or 11 226 persons. In organizations and institutions of the government sector in scientific activities were involved 8 047 persons, which constitutes 32.1% of the total personnel engaged in R&D in 2016. In the higher education sector 5 707 persons are engaged in research and development, with a relative share of 22.8%.

**Figure 5. R&D personnel (in full-time equivalent)**



**Methodological notes**

Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge - including knowledge of humankind, culture and society - and to devise new applications of available knowledge. R&D activity covers basic research, applied research and experimental development.

The indicator ‘R&D expenditure’ is defined as all expenditure for R&D performed within a statistical unit, whatever the source of funds. The R&D expenditure comprises current costs and capital expenditure on R&D.

The indicator 'R&D personnel' measures the human resources going directly into R&D activity, responsible for creation, application and dissemination of new knowledge. R&D personnel include all persons engaged directly in R&D, as well as those providing direct support on R&D (R&D managers, administrators, technicians and clerical staff). R&D personnel comprise researchers and other R&D personnel. Personnel in full-time equivalent (FTE) are calculated on the basis of working time spent on R&D activity during the reference year.

According to the methodological manual ‘Frascati’ (Guidelines for Collecting and Reporting Data on Research and Experimental Development - Frascati Manual, OECD, 2015), adopted by Eurostat, R&D expenditure and R&D personnel are distributed in four institutional sectors:

- Business enterprise sector - includes all firms, organizations and institutions whose primary activity is production of market goods and services (other than those included in Higher education sector);

- Government sector - comprises general administrations of central or state government which furnish, but do not sell common services to satisfy the individual and collective needs of society and which are predominantly budgetary financed (other than those included in Higher education sector);

- Higher education sector - includes all universities, colleges, other institutions of post-secondary education, research and development sectors to higher education institutions and university hospitals;

- Private non-profit sector - includes foundations, associations, etc. providing non-market services.