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Research and Development Expenditure and Personnel in Greece in 2015 - Main Indicators



Research and Development
Expenditure and Personnel
in Greece in 2015 -
Main Indicators

R&D statistics are produced by the National Documentation Centre (EKT) with the cooperation of the Hellenic Statistical Authority (ELSTAT).

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a: 48, Vas. Constantinou Ave, GR-11635 Athens • t: +30 210 7273900 • f: +30 210 7246824
• e: ekt@ekt.gr • www.ekt.gr



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Table of Contents

1. Summary	4
2. R&D Intensity.....	7
3. R&D Expenditure - Greece among EU28 countries	8
4. 4. R&D Expenditure by sector of performance.....	10
5. Source of funds.....	12
6. 6. R&D Expenditure in the Research Institutes administered by GSRT	18
7. R&D Personnel – Greece among EU28 countries	20
8. R&D Personnel	22
9. Methodological Notes	24

1. Summary

This summary report presents the final figures for the main Research and Development (R&D) Expenditure and Personnel indicators in Greece in 2015.

R&D statistics in Greece are produced by the National Documentation Centre with the cooperation of the Hellenic Statistical Authority (ELSTAT) as outlined in the relevant Memoranda of Cooperation that have been signed between the two organizations.

Data presented in this report are the final data of the main indicators that have already been transmitted to Eurostat.

R&D Expenditure

One of the five key indicators of the Europe 2020 strategy is the “R&D intensity” of a country, measuring R&D expenditure as a percentage of GDP. At a European level, the objective is to devote 3 % of gross domestic product (GDP) of EU to R&D activities. The relevant target for Greece has been set at 1.2%.

In 2015 Greece spent 1 703.8 M€ in R&D activities, which marked an increase of 215.1 M€ (or 14.4%) when compared to 2014. The higher R&D expenditure resulted in a higher R&D Intensity, 0.97% in 2015 from 0.84% in 2014 (15.7% increase).



All four sectors of performance increased their R&D expenditure. More analytically in 2015:

- In the Business Enterprise Sector, the R&D expenditure rose to 561.6 M€, which was 11.3% higher than 2014.
- In the Government Sector, the R&D expenditure rose to 479.4 M€, which was 16.2% higher than 2014.
- In the Higher Education Sector, the R&D expenditure rose to 643.8 M€, which was 16.4% higher than 2014.
- In the Private non Profit Sector, the R&D expenditure rose to 19.1 M€, which was 3.4% higher than 2014.



Source of funds

An analysis of R&D expenditure by source of funds shows that in 2015:

- Business-funded R&D stood at 535.0 M€, 20.4% higher than 2014.
- Government R&D funding accounted for 904.0 M€, presenting an increase of 14.0% when compared to 2014.

A further analysis of the sub-components of the government funds shows that in 2015:

- Funds from the ordinary budget increased to 442.7 M€, a rise of 8.5% compared to 2014.
- Funds from the National Strategic Reference Framework (NSRF) increased to 388.1 M€, a rise of 25.9% compared to 2014.



Regarding funds coming from abroad, the main source is the European Commission (EC) through its Framework Programmes for Research (e.g. FP7, H2020). In 2015, EC funding in Greece accounted for 171.0 M€, increasing by 9.6% compared to 2014.

In 2015, the main source of funds for each sector of performance is as follows:

- In the Business Enterprise Sector, 82.3% (462.4 M€) of the R&D expenditure was funded by own funds.
- In the Government Sector, 81.7% (391.4 M€) of the R&D expenditure was funded by government (38.0% coming from ordinary budget, 34.7% from NSRF and 9.0% from other government sources).
- In the Higher Education Sector, 71.1% (458.0 M€) of the R&D expenditure was funded by government (40.5% coming from ordinary budget, 26.6% from NSRF and 4.1% from other government sources).
- In the Private Non-Profit Sector, the R&D expenditure was funded, with almost equal shares, from abroad (30.9% or 5.9 M€) and from the institutions' own funds (30.0% or 5.7 M€).



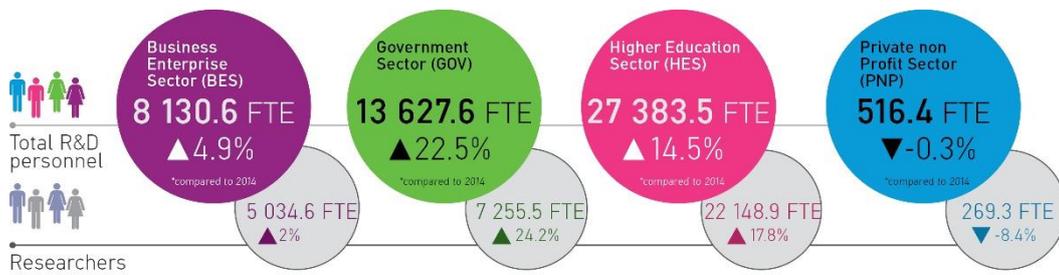
R&D Personnel

In 2015 there was also a significant increase in the number of R&D personnel and researchers (in full time equivalents, FTE).

More analytically, in 2015 the total R&D personnel in Greece rose to 49 658 FTE, which marked an increase of 14.6% when compared to 2014. The number of researchers was 34 708.3 FTE, increasing by 16.2% when compared to 2014.

In 2015 the number of R&D Personnel by sector of performance was as follows:

- In the Business Enterprise Sector, the number of total R&D personnel was 8 130.6 FTE, 4.9% higher than 2014. The number of researchers was 5 034.6 FTE, 2% higher than 2014.
- In the Government Sector, the number of total R&D personnel was 13 627.6 FTE, 22.5% higher than 2014. The number of researchers was 7 255.5 FTE, 24.2% higher than 2014.
- In the Higher Education Sector, the number of total R&D personnel was 27 383.5 FTE, 14.5% higher than 2014. The number of researchers was 22 148.9 FTE, 17.8% higher than 2014.
- In the Private Non-Profit Sector, the number of total R&D personnel was 516.4 FTE, almost unchanged when compared to 2014.



2. R&D Intensity

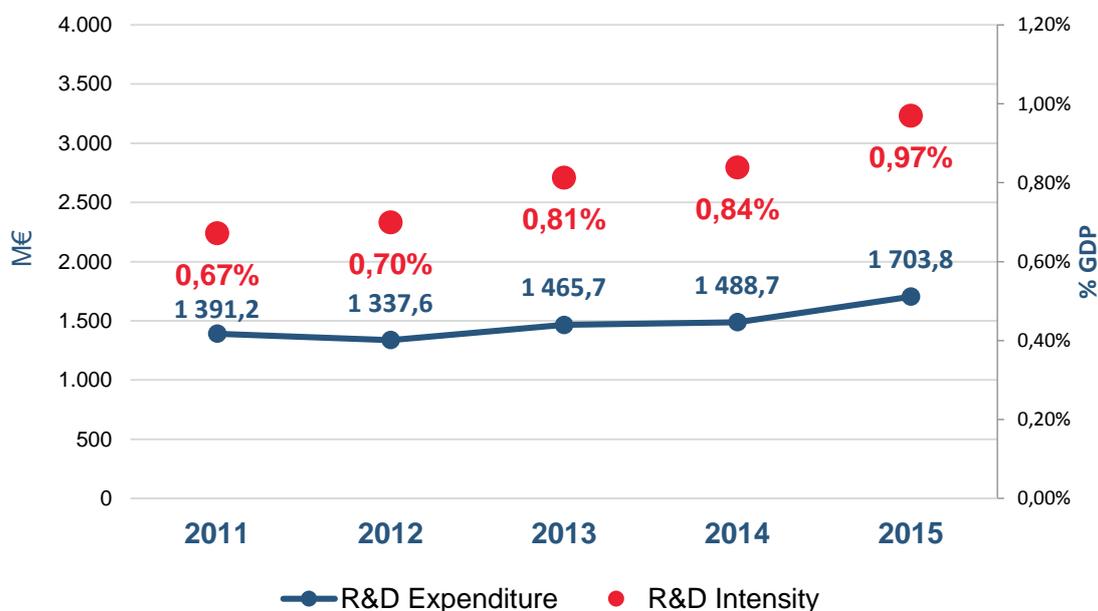
This chapter presents the R&D intensity indicator for Greece, expressed as the R&D expenditure as a percentage of GDP.

TABLE 1.
R&D Expenditure, national GDP (in million EUR) και R&D Intensity (R&D Expenditure as % GDP), 2011 – 2015

	2011	2012	(%) Annual change 2012- 2011	2013	(%) Annual change 2013- 2012	2014	(%) Annual change 2014- 2013	2015	(%) Annual change 2015- 2014
R&D Expenditure (million EUR)	1 391.2	1 337.6	-3.9%	1 465.7	+9.6%	1 488.7	+1.6%	1 703.8	14.4%
GDP (million EUR)	207 028.9	191 203.9	-7.6%	180 389.0	-5.7%	177 559.4	-1.6%	175 697.4	-1.0%
R&D Intensity (R&D Expenditure as % GDP)	0.67%	0.70%	+4.1%	0.81%	+16.1%	0.84%	+3.2%	0.97%	+15.7%

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ1, Δ2)

FIGURE 1.
R&D Expenditure and R&D intensity (R&D Expenditure as % GDP), 2011 - 2015



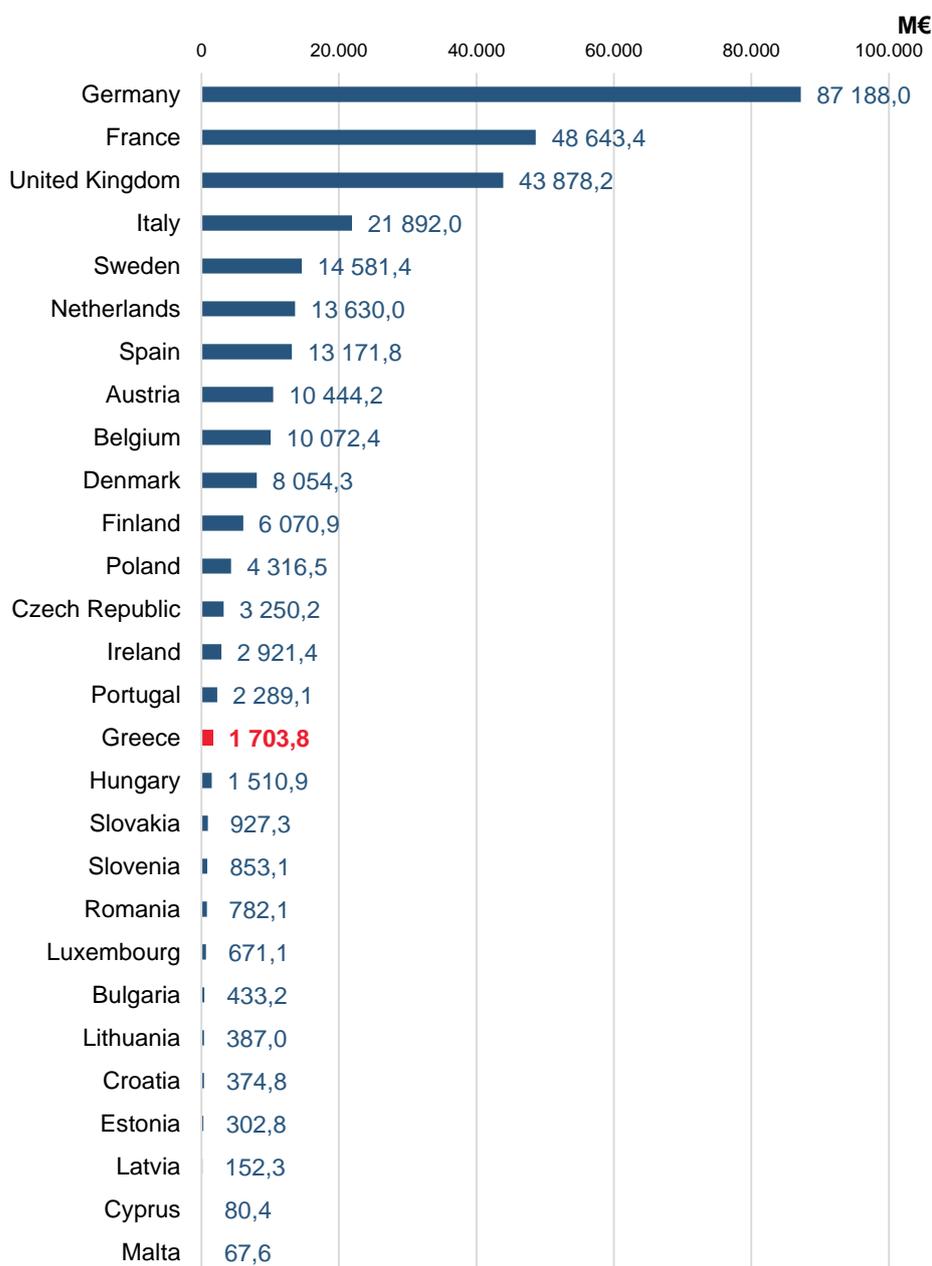
Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ1, Δ2)

3. R&D Expenditure - Greece among EU28 countries

The following figures show Greece's ranking among the EU28 Member States, according to the R&D expenditure (in million EUR) and to the R&D intensity (% GDP) for 2015.

FIGURE 2.

R&D Expenditure (in million EUR) in Greece and in other EU28 Member States, 2015¹



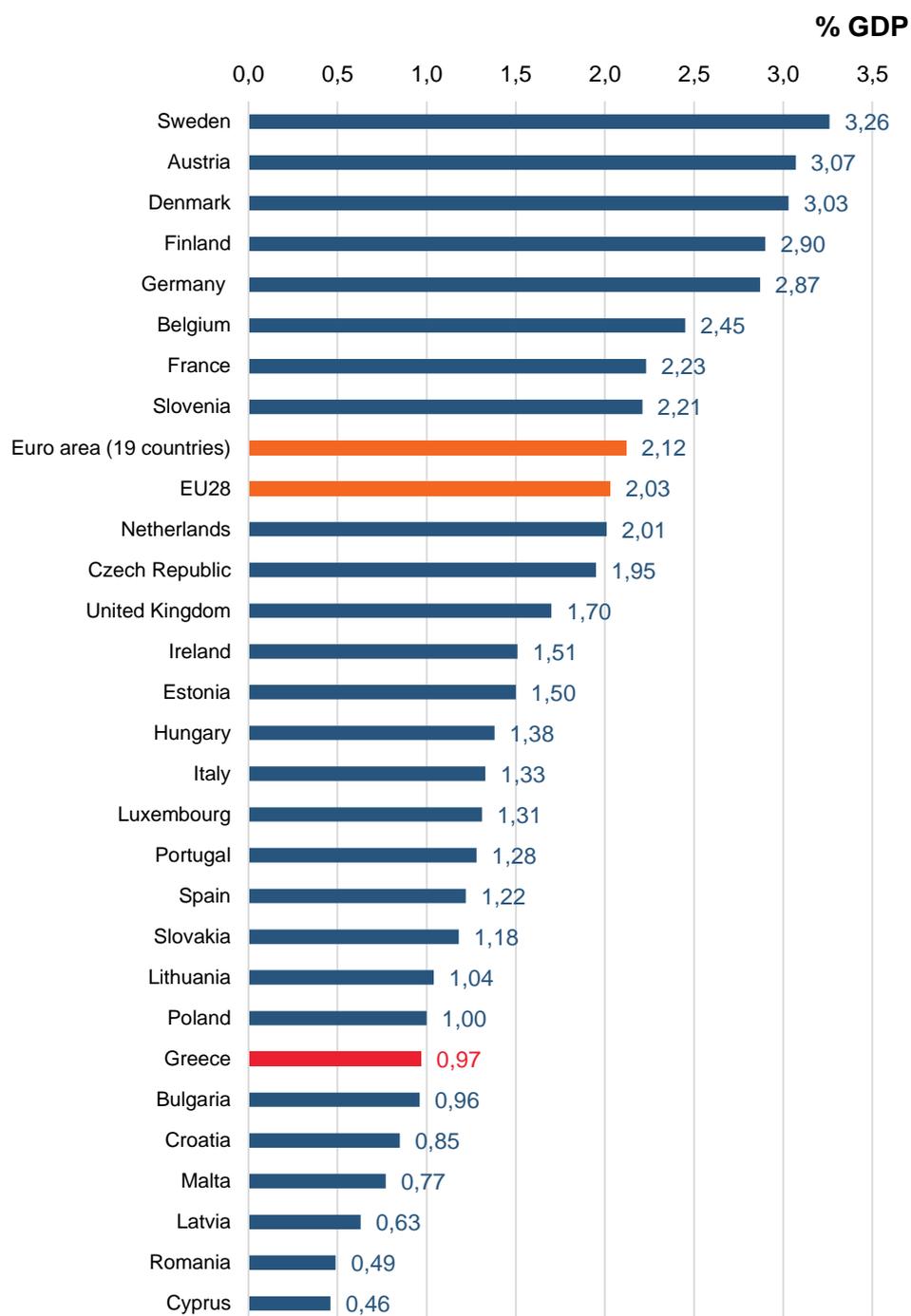
Sources:

EU28 countries: Eurostat (<http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>, data code: rd_e_gerdot, extracted 30.06.2017, last update 30.11.2016)

Greece: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ1)

¹ Ireland data refer to 2014.

FIGURE 3.
R&D intensity (R&D Expenditure as % GDP) in Greece and in other EU28 Member States, 2015²



Sources:

EU28 countries: Eurostat (<http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>, data code: rd_e_gerdtot) extracted 30.06.2017, last update 30.11.2016

Greece: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ2)

² Ireland data refer to 2014.

4. R&D Expenditure by sector of performance

This chapter presents R&D expenditure across the four sectors identified by the Frascati Manual³.

Throughout the tables and diagrams of this report, the four R&D sectors of performance which are used to classify the institutes/entities that perform R&D activities, are referred to in the following order:

- BES - Business Sector
- GOV - Government Sector
- HES - Higher Education Sector
- PNP - Private Non Profit Sector

A further analysis of the classification of the statistical units in the four sectors is made in Chapter 8 - Methodological Notes.

TABLE 2.
R&D Expenditure by sector of performance (in million EUR and annual changes), 2011 – 2015

Sector of performance	2011	2012	(%) Annual change 2012- 2011	2013	(%) Annual change 2013- 2012	2014	(%) Annual change 2014- 2013	2015	(%) Annual change 2015- 2014
BES	485.9	458.6	-5.6%	488.7	+6.6%	504.4	+3.2%	561.6	+11.3%
GOV	331.7	331.9	+0.10%	410.1	+23.6%	412.7	+0.6%	479.4	+16.2%
HES	559.5	534.3	-4.50%	548.6	+2.7%	553.2	+0.8%	643.8	+16.4%
PNP	14.0	12.8	-8.60%	18.3	+43.0%	18.5	+1.0%	19.1	+3.4%
TOTAL⁴	1 391.2	1 337.6	-3.90%	1 465.7	+9.6%	1 488.7	+1.6%	1 703.8	+14.4%

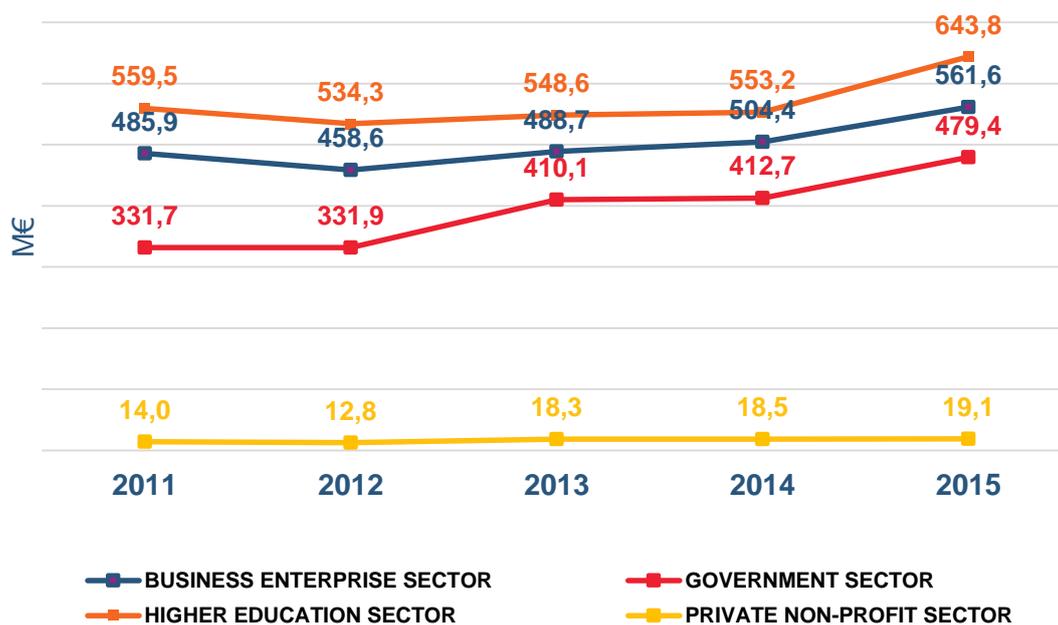
Πηγή: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, κωδικός στοιχείων: Δ1)

³Frascati Manual (2015): Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris.

⁴Differences between aggregates and components can be due to rounding.

FIGURE 4.

R&D Expenditure by sector of performance (in million EUR), 2011 - 2015



Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ1)

TABLE 3.

R&D Intensity (R&D Expenditure as %GDP) by sector of performance, 2011 - 2015

Sector of performance	2011	2012	2013	2014	2015
BES	0.23%	0.24%	0.27%	0.28%	0.32%
GOV	0.16%	0.17%	0.23%	0.22%	0.27%
HES	0.27%	0.28%	0.30%	0.32%	0.37%
PNP	0.01%	0.01%	0.01%	0.01%	0.01%
TOTAL	0.67%	0.70%	0.81%	0.83%	0.97%

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ2)

5. Source of funds

This chapter presents R&D expenditure by source of funds.

Table 4 analyses the sources of funds for R&D activities for the whole country.

Tables 5 - 8 analyse the sources of funds for R&D activities carried out in each of the R&D sectors of performance.

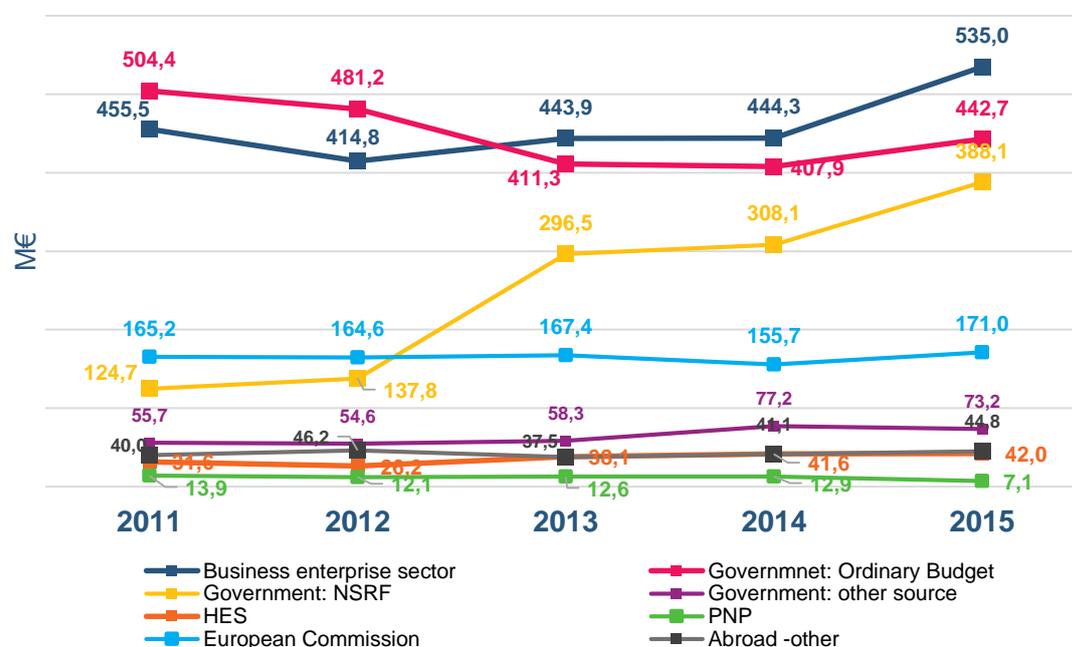
In accordance with the Frascati Manual, sources of funds fall into the 5 following categories:

- **Business Enterprise Sector** – This includes funding from private Greek businesses and businesses from the wider public sector (eg State-owned Enterprises - SOEs) that is used for own R&D funding within the enterprises or for R&D funding of other sectors.
- **Government** - This includes funding from the state (central and regional government) as well as the own-funding of R&D bodies which belong to the GOV sector. In the table, the government sector is further analysed in the following sub components:
 - Ordinary budget: R&D expenditure funded from the ordinary budget. It mainly covers public organisations, Universities, Technological Educational Institutes, etc.
 - NSRF (National Strategic Reference Framework): R&D expenditure funded through the NSRF projects
 - Other sources: R&D expenditure funded by the Public Investment Budget except for NSRF, Budget annexed to the General Budget, Regions, Municipalities etc. It also includes R&D carried out by organisations belonging to the GOV sector with their own resources (using their own capital, donations, legacies, bequests, rents, etc.).
- **Higher Education** – This includes funds from institutes in the sector of higher education to other sectors. It also includes own funding of HES institutes, both public (own capital, donations, legacies, bequests, rents, etc) and private Institutes of Vocational Training (IEK).
- **Private non-profit organisations** – This includes funding from PNP institutions to other sectors and own-funding of the PNP sector.
- **Abroad** – This includes funding from:
 - European Commission (e.g. European Union Framework Programmes)
 - Other sources from abroad: R&D which is conducted by Greek institutions and is funded by businesses from abroad, from international organisations or other bodies from abroad.

TABLE 4.
R&D Expenditure by source of funds (in million EUR and annual changes), 2011 – 2015

Source of funds	2011	2012	(%) Annual change 2012- 2011	2013	(%) Annual change 2013- 2012	2014	(%) Annual change 2014- 2013	2015	(%) Annual change 2015- 2014
Business Enterprise sector	455.5	414.8	-8.9%	443.9	+7.0%	444.3	+0.1%	535.0	+20.4%
Government	684.9	673.6	-1.6%	766.1	+13.7%	793.2	+3.5%	904.0	+14.0%
Government: Ordinary Budget	504.4	481.2	-4.6%	411.3	-14.5%	407.9	-0.8%	442.7	+8.5%
Government: NSRF	124.7	137.8	+10.5%	296.5	+115.2%	308.1	+3.9%	388.1	+25.9%
Government: other source	55.7	54.6	-2.0%	58.3	+6.8%	77.2	+32.4%	73.2	-5.1%
HES	31.6	26.2	-17.1%	38.1	+45.4%	41.6	+9.1%	42.0	+1.0%
PNP	13.9	12.1	-12.9%	12.6	+4.1%	12.9	+2.2%	7.1	-44.6%
Abroad	205.2	210.9	+2.8%	204.9	-2.8%	196.8	-4.0%	215.7	+9.6%
European Commission	165.2	164.6	-0.4%	167.4	+1.7%	155.7	-7.0%	171.0	+9.8%
Abroad -other	40	46.2	+15.5%	37.5	-18.8%	41.1	+9.5%	44.8	+9.0%
TOTAL⁵	1 391.2	1 337.6	-3.9%	1 465.7	9.6%	1 488.7	+1.6%	1 703.8	+14.4%

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

FIGURE 5.
R&D Expenditure by source of funds (in million EUR), 2011 – 2015


Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

⁵Differences between aggregates and components can be due to rounding.

TABLE 5.**R&D Expenditure in the Business Enterprise Sector by source of funds (in million EUR), 2011–2015**

Source of funds	2011	2012	2013	2014	2015
Business Enterprise sector (own funds)	382.8	354.1	398.7	397.9	462.4
Government	39.1	37.6	34	52.9	49.5
Government: NSRF	26.5	24.9	28.7	45.2	45.8
Government: other source	12.5	12.7	5.3	7.7	3.7
HES	0.6	0.5	0.3	0.2	0.0
PNP	0.3	0.2	0	0.0	0.0
Abroad	63	66.2	55.7	53.4	49.7
European Commission	40.9	38.6	36.3	32.7	26.7
Abroad -other	22.1	27.6	19.4	20.6	23.0
TOTAL	485.9	458.6	488.7	504.4	561.6

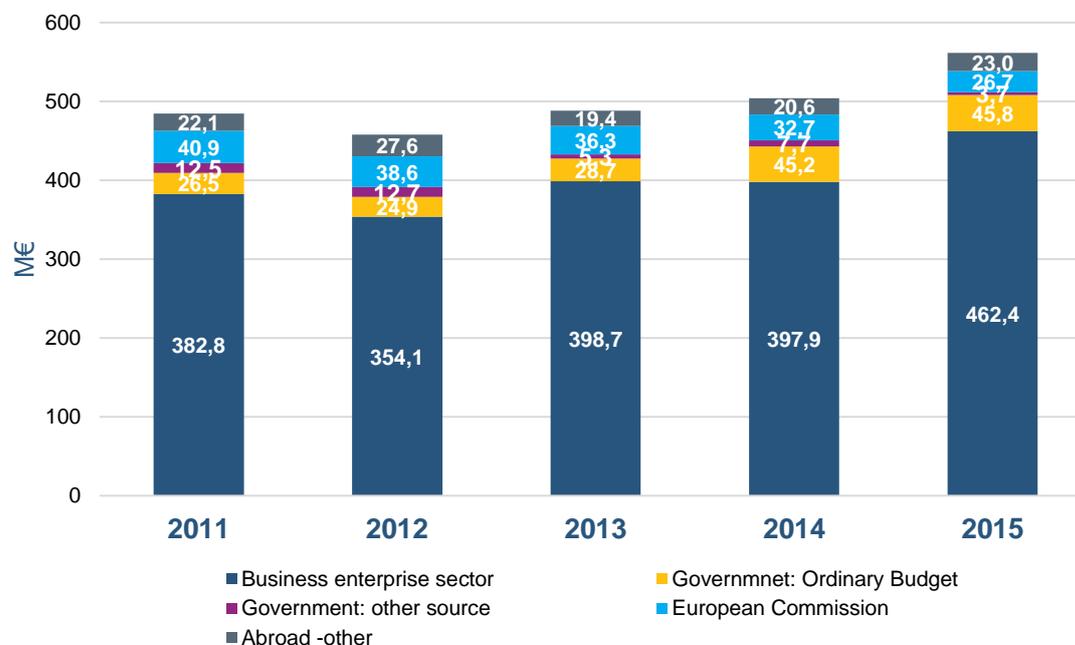
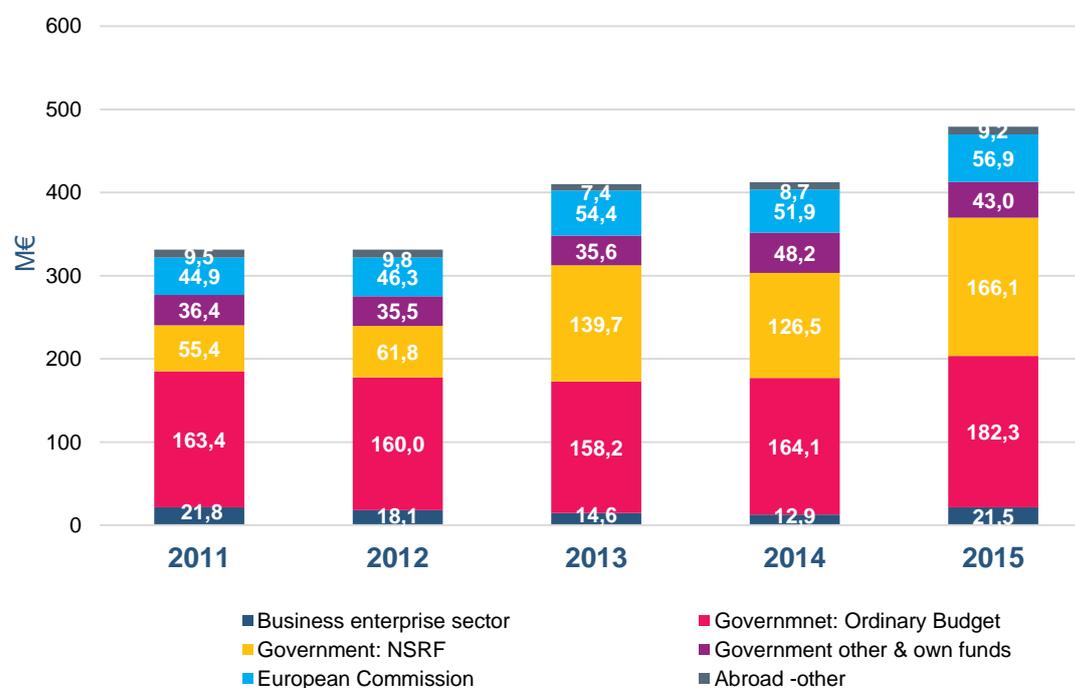
Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)**FIGURE 6.****R&D Expenditure in the Business Enterprise Sector by source of funds (in million EUR), 2011 - 2015**Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

TABLE 6.
R&D Expenditure in the Government Sector by source of funds (in million EUR), 2011 – 2015

Source of funds	2011	2012	2013	2014	2015
Business Enterprise sector	21.8	18.1	14.6	12.9	21.5
Government	255.2	257.3	333.5	338.9	391.4
Government: Ordinary Budget	163.4	160	158.2	164.1	182.3
Government: NSRF	55.4	61.8	139.7	126.5	166.1
Government: other source (including own funding)	36.4	35.5	35.6	48.2	43.0
HES	-	-	0.2	0.3	0.2
PNP	0.3	0.3	-	-	-
Abroad	54.4	56.2	61.8	60.6	66.2
European Commission	44.9	46.3	54.4	51.9	56.9
Abroad -other	9.5	9.8	7.4	8.7	9.2
TOTAL	331.7	331.9	410.1	412.7	479.4

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

FIGURE 7.
R&D Expenditure in the Government Sector by source of funds (in million EUR), 2011 – 2015



Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

TABLE 7.**R&D Expenditure in the Higher Education Sector by source of funds (in million EUR), 2011 –2015**

Source of funds	2011	2012	2013	2014	2015
Business Enterprise sector	50.1	42.1	30.0	33.0	48.8
Government	389.2	377.3	395.7	398.6	458.0
Government: Ordinary Budget	340.9	321.2	253.1	243.8	260.4
Government: NSRF	41.5	49.8	125.5	133.9	171.4
Government: other source	6.7	6.3	17.1	21.0	26.1
HES (including own funding)	30.9	25.7	37.7	41.0	41.7
PNP	4.1	3.2	3.8	3.9	1.4
Abroad	85.2	86	81.5	76.7	94.0
European Commission	77.3	78.1	74.6	68.8	85.2
Abroad -other	7.9	7.9	6.9	7.9	8.8
TOTAL	559.5	534.3	548.6	553.2	643.8

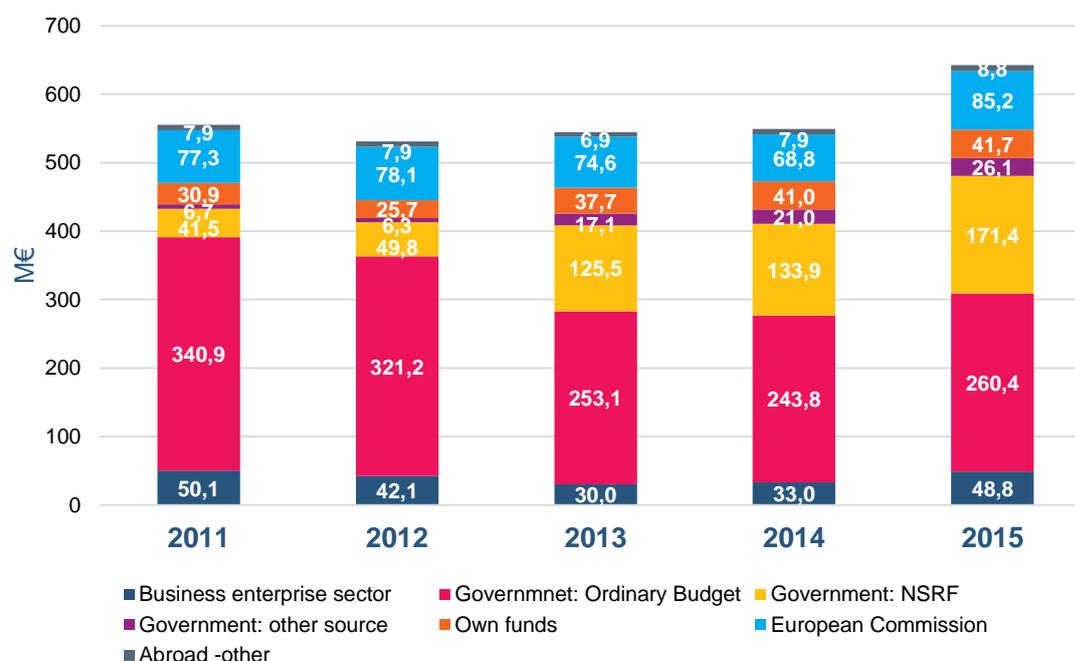
Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)**FIGURE 8.****R&D Expenditure in the Higher Education Sector by source of funds (in million EUR), 2011 - 2015**Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

TABLE 8.

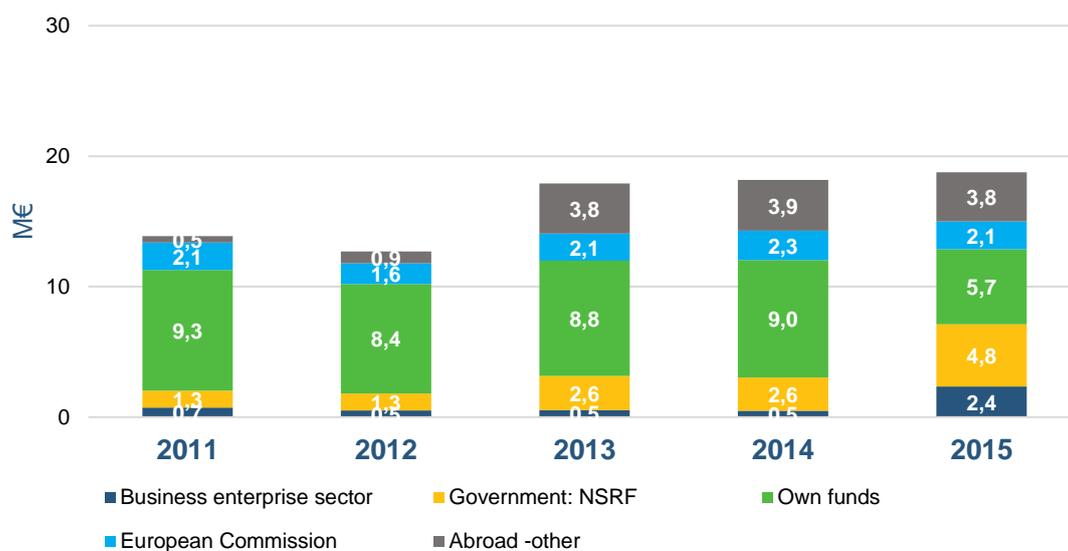
R&D Expenditure in the Private Non-Profit Sector by source of funds (in million EUR), 2011 – 2015

Source of funds	2011	2012	2013	2014	2015
Business Enterprise sector	0.7	0.5	0.5	0.5	2.4
Government	1.5	1.4	2.9	2.8	5.1
Government: Ordinary Budget	0.1	-	-	-	0.0
Government: NSRF	1.3	1.3	2.6	2.6	4.8
Government: other source	0.1	0.1	0.3	0.3	0.3
HES (including own funding)	-	-	-	-	0.0
PNP	9.3	8.4	8.8	9.0	5.7
Abroad	2.6	2.5	5.9	6.2	5.9
European Commission	2.1	1.6	2.1	2.3	2.1
Abroad -other	0.5	0.9	3.8	3.9	3.8
TOTAL	14.0	12.8	18.3	18.5	19.1

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

FIGURE 9.

R&D Expenditure in the Private Non-Profit Sector by source of funds (in million EUR), 2011 – 2015



Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ3)

6. R&D Expenditure in the Research Institutes administered by GSRT

This chapter presents the evolution of R&D Expenditure of the research institutes that are supervised by the General Secretariat for Research and Technology⁶ by source of funds, during the years 2011 – 2015.

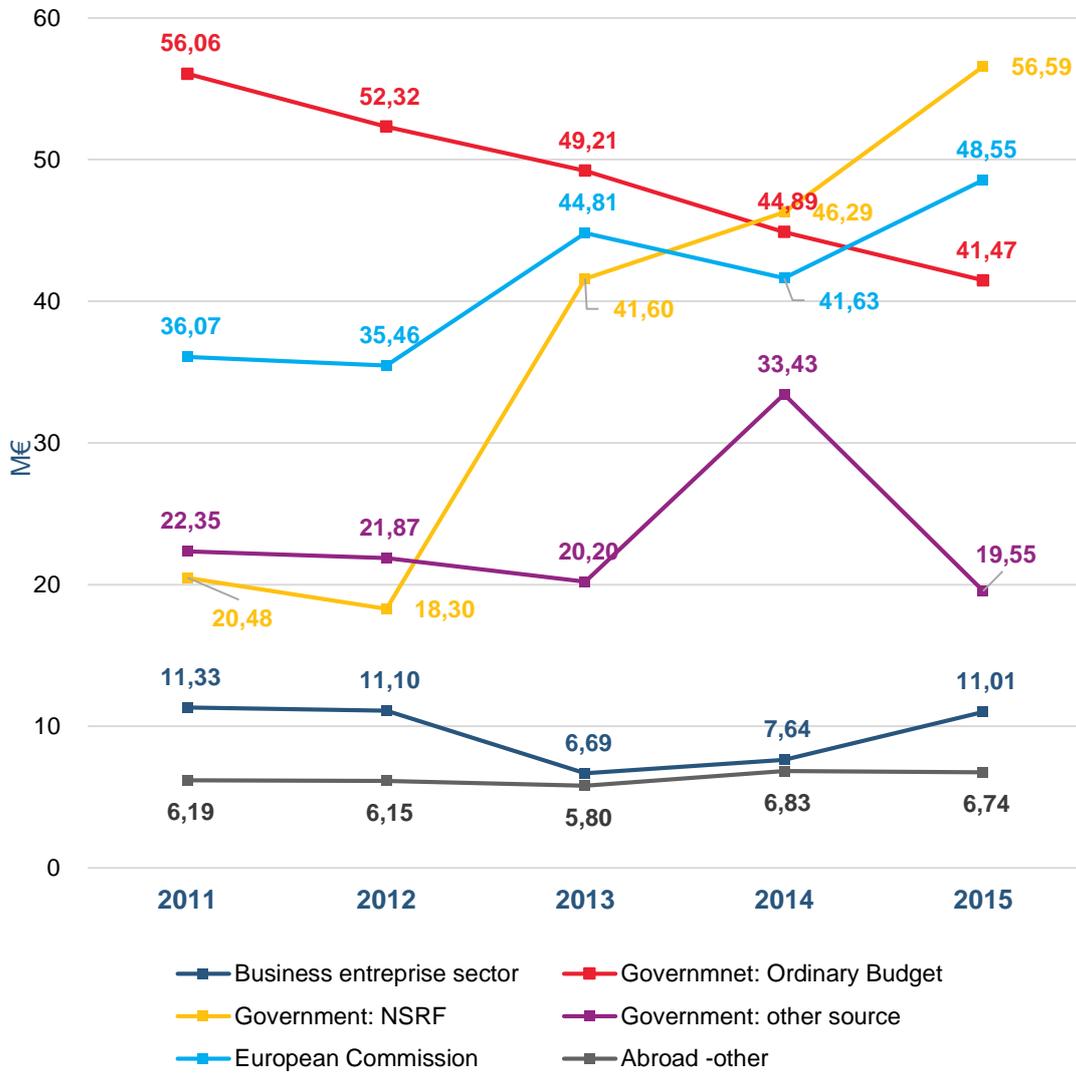
TABLE 9.
R&D Expenditure in the GSRT Research Institutes by source of funds (in million EUR and annual changes), 2011 – 2015

Source of funds	2011	2012	(%) Annual change 2012- 2011	2013	(%) Annual change 2013- 2012	2014	(%) Annual change 2014- 2013	2015	(%) Annual change 2015- 2014
Business	11.3	11.1	-2.0%	6.7	-39.8%	7.6	+14.2%	11.0	+44.2%
Enterprise sector									
Government	98.9	92.5	-6.5%	111.0	+20.0%	124.6	+12.3%	117.6	-5.6%
Government:									
Ordinary Budget	56.1	52.3	-6.7%	49.2	-6.0%	44.9	-8.8%	41.5	-7.6%
Government: NSRF	20.5	18.3	-10.6%	41.6	+127.4%	46.3	+11.3%	56.6	+22.2%
Government: other source (including own funding)	22.4	21.9	-2.2%	20.2	-7.6%	33.4	+65.5%	19.6	-41.5%
HES	0.0	0.0		0.1		0.3		0.1	
PNP	0.1	0.1		0.0		0.0		0.0	
Abroad	42.3	41.6	-1.5%	50.6	+21.6%	48.5	-4.2%	55.3	+14.1%
European Commission	36.1	35.5	-1.7%	44.8	+26.4%	41.6	-7.1%	48.5	+16.6%
Abroad -other	6.2	6.2	-0.6%	5.8	-5.7%	6.8	+17.7%	6.7	-1.5%
TOTAL	152.6	145.3	-4.8%	168.4	+15.9%	181.0	+5%	184.0	+1.7%

⁶ Research Institutes (in alphabetic order in Greek): National Observatory of Athens, National Hellenic Research Foundation, The Centre for Research and Technology (including Center for Research and Technology – Thessaly), National Center for Scientific Research 'DEMOKRITOS', Hellenic Centre for Marine Research, National Centre for Social Research, Greek Atomic Energy Commission, Hellenic Pasteur Institute, "Alexander Fleming" Biomedical Sciences Research Center, Athena-Research and Innovation Center in Information, Communication and Knowledge Technologies, Foundation for Research & Technology – Hellas, Thessaloniki Science Center & Technology Museum - NOESIS.

FIGURE 10.

R&D Expenditure in the GSRT Research Institutes by source of funds (in million EUR), 2011 – 2015

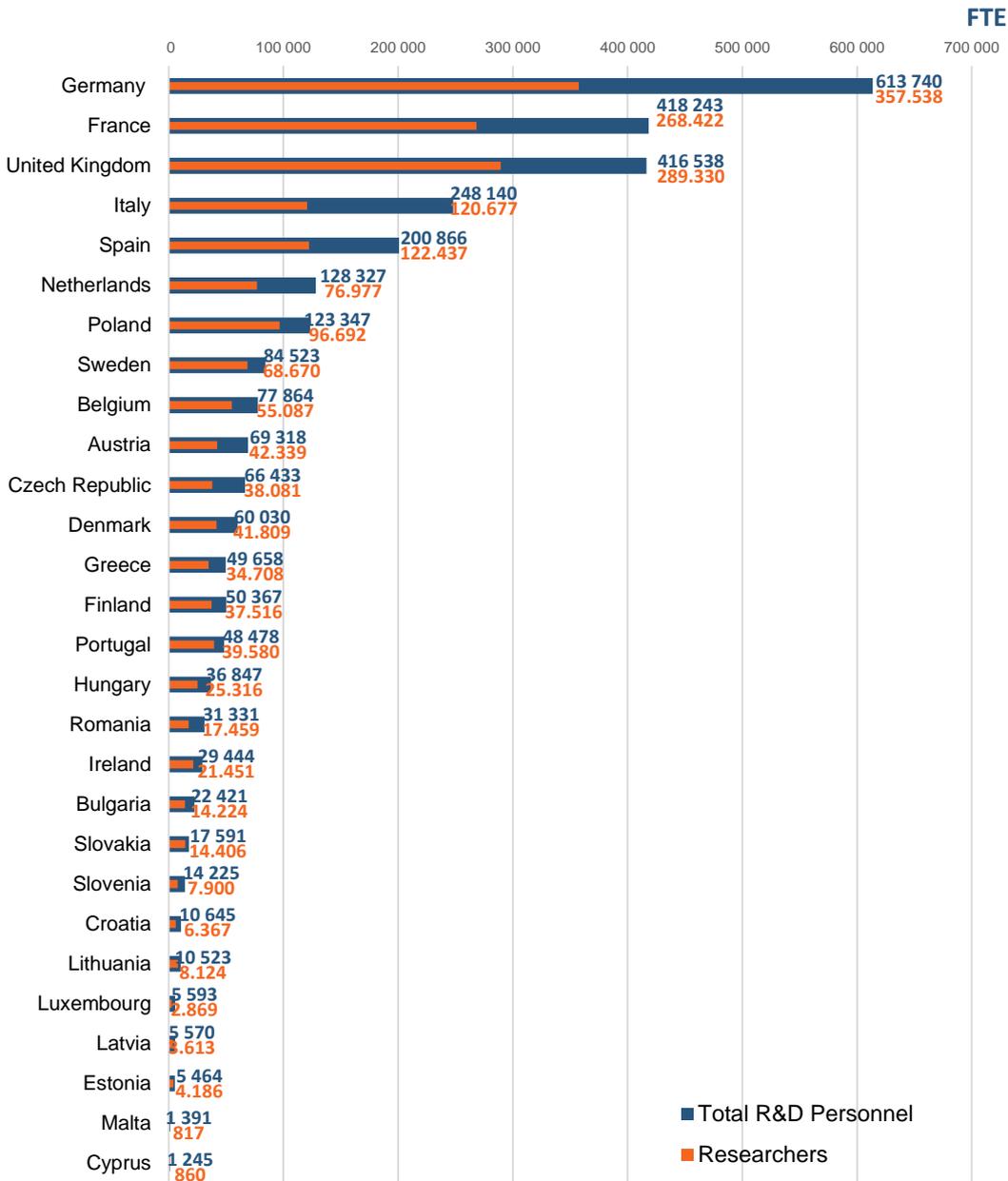


7. R&D Personnel – Greece among EU28 countries

In 2015, the total R&D personnel in Greece was 49 658 (in full-time equivalents / FTE), of which the researchers were 34 708.3 FTE. The following figures show Greece's ranking among the EU28 Member States, according to the R&D personnel (in FTE and as a percentage in total employment).

FIGURE 11.

R&D personnel and Researchers (in full-time equivalents / FTE) in Greece and in other EU28 Member States, 2015

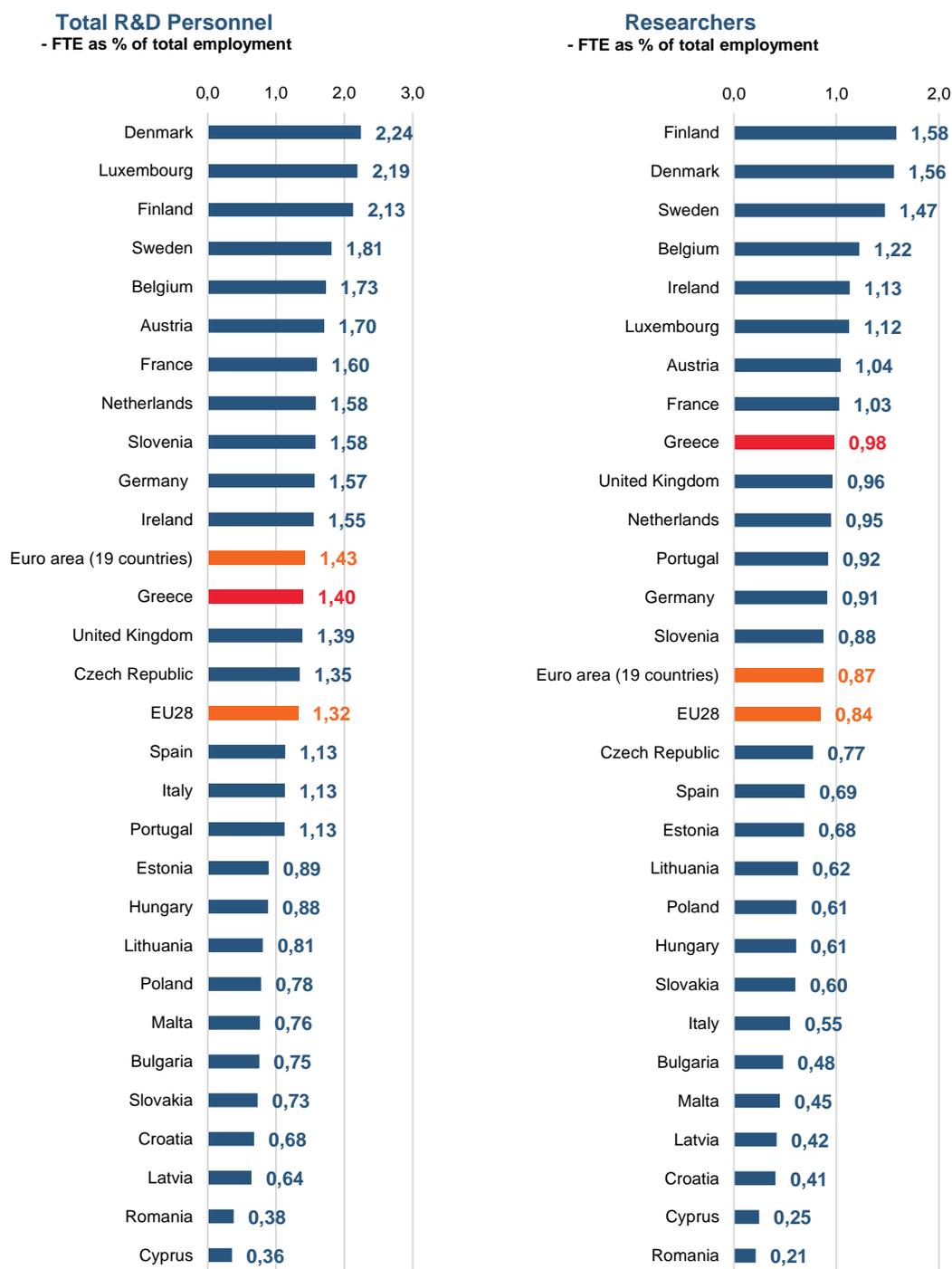


Sources:

EUE28 countries: Eurostat (<http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>, data code: rd_p_persocc, extracted 30.06.2017, last update 06.03.2017) For France, data refer to 2014.

Greece: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ1)

FIGURE 12.
R&D personnel and Researchers (FTEs as % of total employment in Greece and in other EU28 Member States, 2015)



Sources:

EU28 countries: Eurostat (<http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>, data code: rd_p_perslf], extracted 30.06.2017, last update 06.03.2017) For France, data refer to 2014.

Greece: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Δ1)

8. R&D Personnel

R&D personnel includes all persons employed directly in R&D, as well as those providing direct services such as R&D managers, administrators, technicians and clerical staff. R&D personnel is classified according to its R&D function: researchers and other R&D personnel.

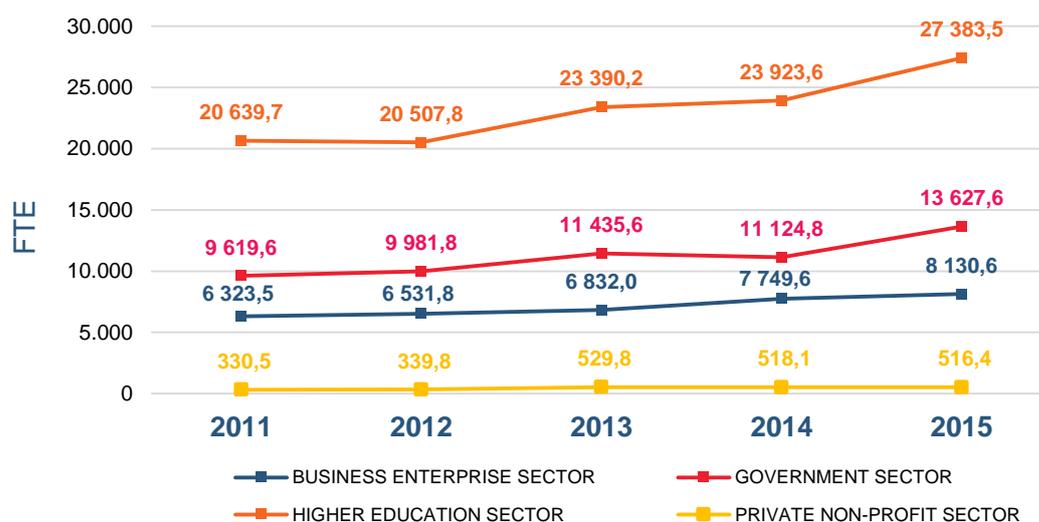
The figures below present the evolution of the R&D Personnel, expressed in full-time equivalents (FTE) during the 5-year period 2011 – 2015, for both total R&D Personnel and Researchers.

TABLE 10.
R&D Personnel by sector of performance (FTE and annual changes), 2011 – 2015

Sector of performance	2011	2012	(%) Annual change 2012- 2011	2013	(%) Annual change 2013- 2012	2014	(%) Annual change 2014- 2013	2015	(%) Annual change 2015- 2014
BES	6 323.5	6 531.8	+3.3%	6 832.0	+4.6%	7 749.6	+13.4%	8 130.6	+4.9%
GOV	9 617.4	9 981.8	+3.8%	11 435.5	+14.6%	11 124.8	-5.4%	13 627.6	+22.5%
HES	20 639.7	20 507.8	-0.6%	23 390.2	+14.1%	23 923.6	+2.5%	27 383.5	14.5%
PNP	330.5	339.8	+2.8%	529.8	+55.9%	518.1	-2.2 %	516.4	-0.3%
TOTAL⁷	36 913.3	37 361.0	+1.2%	42 187.6	+12.9%	43 316.1	+2.1%	49 658.0	+14.6%

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, κωδικός στοιχείων: Π2)

FIGURE 13
R&D Personnel by sector of performance (FTE), 2011 – 2015



Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Π2)

⁷Differences between aggregates and components can be due to rounding.

TABLE 11

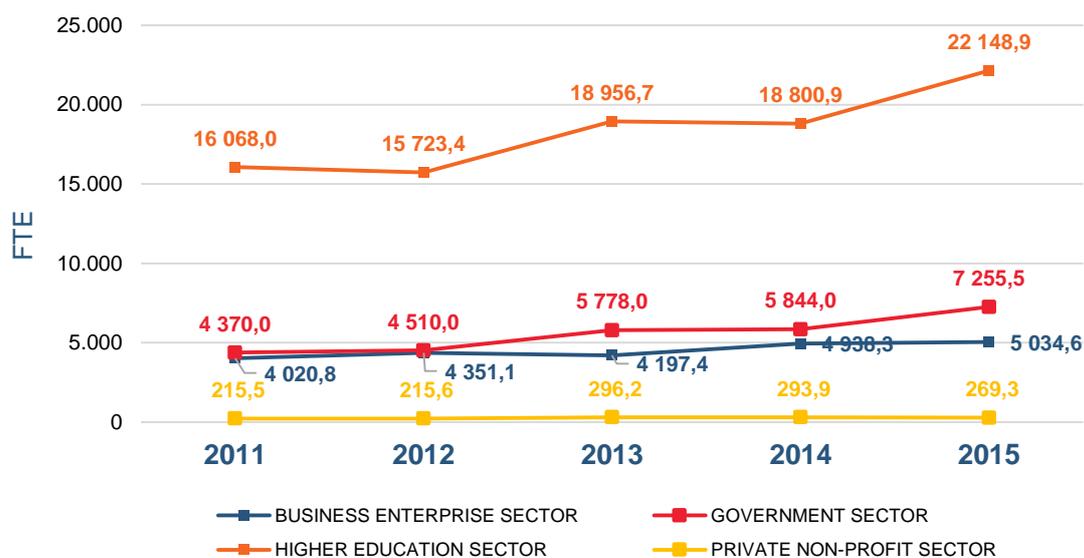
Researchers by sector of performance (FTE and annual changes),, 2011 – 2015

Sector of performance	2011	2012	(%) Annual change 2012- 2011	2013	(%) Annual change 2013- 2012	2014	(%) Annual change 2014- 2013	2015	(%) Annual change 2015- 2014
BES	4 020.8	4 351.1	+8.2%	4 197.4	-3.5%	4 938.3	+17.7%	5 034.6	+2.0%
GOV	4 369.1	4 510.0	+3.2%	5 777.9	+28.1%	5 844.0	+1.1%	7 255.5	+24.2%
HES	16 068.0	15 723.4	-2.1%	18 956.7	+20.6%	18 800.9	-0.8%	22 148.9	+17.8%
PNP	215.5	215.6	0.0%	296.2	+37.4%	293.9	-0.8%	269.3	-8.4%
TOTAL⁸	24 674.3	24 800.0	+0.5%	29 228.2	+17.9%	29 877.1	+2.2%	34 708.3	16.2%

Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Π2)

FIGURE 14

Researchers by sector of performance (FTE), 2011 - 2015



Source: EKT (<http://metrics.ekt.gr/statistika-etak/datatables>, data code: Π2)

⁸Differences between aggregates and components can be due to rounding.

9. Methodological Notes

<p>Brief data description</p>	<p>The aim of the R&D (Research and Development) survey is to produce statistics about (intramural) R&D Expenditure and R&D personnel covering R&D performing entities in the private and public sectors as follows: Business Enterprise Sector (BES), Government Sector (GOV), Higher Education Sector (HES), Private non-Profit Sector (PNP) as well as for the country as a whole.</p> <p>R&D Expenditure as a percentage of GDP is used to calculate the R&D Intensity of a country.</p> <p>This publication presents final data for R&D expenditure and R&D Personnel (in FTE) for 2015 in accordance with the European Regulation (995/2012). Further and more detailed analyses of final figures (R&D expenditure by type of cost, etc and R&D Personnel by sex, qualification, etc.) are published here: http://metrics.ekt.gr/statistika-etak.</p>
<p>Institutional Coverage</p>	<p>The main analysis of R&D statistics is by four institutional sectors of performance. Statistical units, from which data are collected, are therefore classified into the following four categories:</p> <ul style="list-style-type: none"> ▪ Business enterprise sector (BES), which includes all firms, organisations and institutions whose primary activity is the market production of goods or services (other than higher education). In addition, this sector includes public enterprises as well as non-profit institutions mainly serving the enterprises. Economic activity (NACE rev.2) and size class coverage is defined in Commission Regulation 995/2012 . ▪ Government (GOV) sector, which includes all departments, offices and other bodies administered or/and financed by Ministries, such as the Public Research Centers that are supervised by the General Secretariat for Research and Technology (GSRT), other Public Research Institutions supervised by different Ministries, archaeological and cultural institutions, public hospitals, public independent authorities, etc. ▪ Higher education sector (HES), which includes all Universities and Technological Educational Institutes (TEI), University research institutes (EPI) and similar establishments in the Technological Educational Institutes (Technological Research Centres / KTE), University Hospitals, Private Institutes of Vocational Training (IEK) accredited by the Ministry of Education and Religious Affairs, as well as other HE schools/academies (e.g. Higher Ecclesiastical Schools, Military Academies). ▪ Private non-profit (PNP) sector, which includes non-market, private non-profit institutions serving the general public, such as non-market units, professional and learned societies, charities, relief or aid agencies, trade unions, consumers' associations, etc
<p>Concepts and definitions</p>	<p>Basic statistical concepts and definitions, standard classifications and guidelines for the production of R&D statistics are outlined in the Frascati Manual (OECD, 2002).⁹</p> <p>Research & Development – R&D: According to the Frascati Manual, R&D comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.</p> <p>The term R&D covers three activities: basic research, applied research and experimental development.</p> <p>Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.</p>

⁹ In 2015, a new edition of the Frascati Manual was published by OECD: [Frascati Manual \(2015\): Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris](#). The implementation of the updated Frascati Manual for the production of the European R&D statistics is guided by Eurostat and is expected to start in the upcoming survey rounds.

Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

R&D covers both formal R&D in R&D units and informal or occasional R&D in other units.

Intramural R&D Expenditure (GERD)

R&D Expenditure data are compiled on the basis of performers' reports of intramural expenditure. Intramural expenditure are all expenditure for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

Both current (i.e. labour cost and other current cost such as non-capital purchases of materials, supplies and equipment to support R&D) and capital expenditure (i.e. expenditure on land and buildings, instruments and equipment) are included.

Extramural expenditure incurred for the acquisition of R&D performed by other units and grants given to others for performing R&D are excluded.

R&D personnel

R&D personnel consists of all persons employed directly on R&D, as well as those providing direct services such as R&D managers, administrators, and clerical staff.

R&D personnel includes the following categories.

Researchers: Professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned. Postgraduate students at the PhD level also fall into this category.

Other R&D Personnel: Personnel involved in R&D activities by performing scientific and technical tasks, usually under the supervision of researchers (e.g. developers, programmers, manufacturers, personnel collecting bibliometric material or implementing surveys and interviews, etc.), as well as personnel performing various tasks directly related to R&D activities necessary for the completion of these tasks (e.g. workers, secretaries or other administrators).

R&D personnel data is available in head count (HC) and in full-time equivalent (FTE).

Full-Time Equivalent (FTE)

Full time equivalent (FTE) is the unit used to measure employed persons or students in a way that makes them comparable although they may work or study a different number of hours per week. It is therefore based on the time a person devotes to R&D activities.

FTE is calculated by comparing the time one devotes to R&D activities with full-time work. One FTE may therefore be thought of as one person-year, while for a part-time R&D worker FTE is calculated as the percentage of the time that he/she spends on R&D over his/her total working time.

More concepts and definitions are available in the online 'Glossary' (<http://metrics.ekt.gr/el/lexicon/2>) in Greek only.

Legal framework

R&D data collection is based on Commission Regulation 995/2012 (from reference year 2012 onwards) on statistics on Science and Technology.

The National Documentation Centre, the national institution for the collection, documentation and provision of science and technology content (www.ekt.gr), was assigned the responsibility for the collection and compilation of R&D statistics in April 2012 by the General Secretariat for Research and Technology (GRST).

The collection of the data presented in this publication was made in collaboration with the Hellenic Statistical Authority (Memoranda of Understanding of 28.01.2014 and of 04.06.2015).

Data collection

The data are collected through an extensive survey including all known or potential R&D performers in the BE, HE, GOV and PNP sectors. For the needs of the survey, EKT has developed a dedicated register of all known R&D performers, based on information from administrative sources. The R&D register is updated on a systematic basis. Data are collected through census survey in HE, GOV and PNP sectors and through a combination of census and sample surveys in the business enterprise sector.

In addition, administrative data is used as provided by the following official administrative sources:

- HE sector: General University Funds (GUF) and data on permanent personnel, provided by the Ministry of Education, Research and Religious Affairs and the Ministry of Health.
- GOV sector: Government funding through Ordinary Budget and data on permanent personnel provided by the Ministry of Culture and the Ministry of Health.

Data validation and editing is performed in collaboration with respondents, whenever necessary. Consistency checks are also conducted between the collected data and relevant data provided by the following administrative sources:

- Monitoring Information System (M.I.S.) the central information system about projects financed under the National Strategic Reference Framework (NSRF) – Source: Special Service for the Monitoring Information System (M.I.S.).
- eCORDA database with information about signed grants and beneficiaries with regards to EU Framework Programme for Research (FP7, H2020) – Source: European Commission
- GBARD data – Source: Official GBAORD data that have been collected and compiled by EKT and made available through Eurostat dissemination database

Data processing and data analysis have been conducted using standard methodological techniques and Eurostat guidelines on the harmonized production of R&D statistics across Member States.



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