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In 2013, total expenditure on research and development amounted to €64.2 million, or 0.86 per cent of GDP.

## Research and Development in Malta: 2011-2013

### R&D expenditure

During 2013, total expenditure on Research and Development (R&D) activities amounted to €64.2 million, an increase of €2.5 million equivalent to 4.0 per cent from 2012. The Business Enterprise sector contributed 55.6 per cent to total R&D, whereas the Higher Education and Government sectors contributed 35.6 and 8.8 per cent respectively (Table 1).

The added R&D expenditure was triggered by higher outlays on recurrent expenditure of €1.8 million, mainly as a result of higher labour costs in the Business Enterprise and Higher Education sectors. Moreover, higher outlays were recorded for capital expenditure in the Government and Higher Education sectors. Labour costs represented 57.2 per cent of total expenditure, whereas other recurrent expenditure and capital expenditure had a share of 21.0 per cent and 21.8 per cent respectively (Table 2).

In 2013, the highest rate of R&D activity was recorded in Engineering and Technology which accounted for 29.6 per cent of total expenditure, followed by Natural sciences (26.4 per cent) and Medical sciences (22.4 per cent). Year-on-year comparisons show that the highest increases were registered in Natural and Social sciences by €3.8 million and €1.3 million respectively. Conversely, Medical sciences went down by €2.8 million (Table 3).

The majority of R&D activity in Engineering and Technology and Natural sciences was undertaken in business enterprises whereas research in relation to Medical and Social sciences was mainly carried out by the Higher Education sector.

Each sector mostly funds its own research, supplemented by foreign funds, mainly foreign business enterprise funds for the Business Enterprise sector, general university funds for the Higher Education sector and EU funds for the Government sector. Foreign funds for R&D reached €13.8 million, or 21.4 per cent of total funds (Table 4).

### R&D employment

In 2013, 2,293 employees were engaged in R&D work, of whom 1,326 dedicated part of their time to R&D. The highest R&D employment rate was registered in the Higher Education sector, at 1,160 employees, followed by the Business Enterprise sector, with 1,085 employees. Male employment was predominant among researchers and technicians (Table 5).

As regards employment by major field of science, in 2013 the highest employment activity in R&D was recorded in Engineering and Technology with 658 employees, followed by Natural sciences and Social sciences, with 643 and 380 employees respectively (Table 6).

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### GBAORD

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In 2014, the highest outlays on the Government Budget Appropriations or Outlays for R&D (GBAORD) were recorded in the socio-economic activities related to Health (€4.3 million), Culture, recreation, religion and media, (€3.8 million) and Industrial production and technology (€3.7 million) (Table 7) ■

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**Table 1. Annual R&D Expenditure as a % of GDP\* by sector**

	€000		
Type of sector	2011	2012	2013
Government Sector (GOV)	1,999	4,748	5,630
Business Enterprise Sector (BES)	31,521	36,194	35,734
Higher Education Sector (HES)	14,237	20,807	22,883
<b>Total R&amp;D expenditure</b>	<b>47,757</b>	<b>61,749</b>	<b>64,247</b>
<b>% of GDP*</b>	<b>0.69</b>	<b>0.86</b>	<b>0.86</b>

\* Source: Gross Domestic Product as published in News Release No. 108/2015

Note: Totals may not add up due to rounding

**Table 2. Annual expenditure on R&D by type of costs**

	€000			
Type of costs	GOV	BES	HES	Total
<b>2011</b>				
<b>Recurrent Expenditure</b>	<b>1,018</b>	<b>30,275</b>	<b>12,795</b>	<b>44,088</b>
Labour Costs	698	19,608	9,975	30,281
Other Recurrent Expenditure	320	10,667	2,821	13,808
<b>Capital Expenditure</b>	<b>981</b>	<b>1,246</b>	<b>1,441</b>	<b>3,668</b>
Land and Buildings	949	125	1,232	2,306
Instruments and Equipment	32	1,121	209	1,362
<b>Total Expenditure</b>	<b>1,999</b>	<b>31,521</b>	<b>14,237</b>	<b>47,757</b>
<b>2012</b>				
<b>Recurrent Expenditure</b>	<b>934</b>	<b>31,601</b>	<b>15,868</b>	<b>48,403</b>
Labour Costs	616	19,557	11,761	31,934
Other Recurrent Expenditure	319	12,044	4,107	16,469
<b>Capital Expenditure</b>	<b>3,814</b>	<b>4,593</b>	<b>4,939</b>	<b>13,346</b>
Land and Buildings	3,757	3,182	3,987	10,925
Instruments and Equipment	57	1,411	953	2,421
<b>Total Expenditure</b>	<b>4,748</b>	<b>36,194</b>	<b>20,807</b>	<b>61,749</b>
<b>2013</b>				
<b>Recurrent Expenditure</b>	<b>772</b>	<b>32,465</b>	<b>16,985</b>	<b>50,222</b>
Labour Costs	451	22,947	13,361	36,759
Other Recurrent Expenditure	321	9,518	3,624	13,463
<b>Capital Expenditure</b>	<b>4,858</b>	<b>3,269</b>	<b>5,899</b>	<b>14,025</b>
Land and Buildings	4,825	1,522	5,318	11,665
Instruments and Equipment	33	1,747	581	2,360
<b>Total Expenditure</b>	<b>5,630</b>	<b>35,734</b>	<b>22,883</b>	<b>64,247</b>

Note: Totals may not add up due to rounding

Table 3. Annual expenditure on R&amp;D by major field of science and sector

								€000	
Type of sector		Natural sciences	Engineering and Technology	Medical sciences	Agricultural sciences	Social sciences	Humanities	Not elsewhere classified	Total
Government Sector	2011	56	53	789	772	245	80	3	1,999
	2012	66	135	3,219	1,185	53	15	76	4,748
	2013	96	47	4,725	728	35	-	-	5,630
Business Enterprise Sector	2011	8,753	14,424	6,482	760	441	9	653	31,521
	2012	10,451	13,761	9,534	797	336	37	1,278	36,194
	2013	14,366	14,512	4,641	635	655	104	822	35,734
Higher Education Sector	2011	1,480	3,207	3,287	261	3,740	2,142	120	14,237
	2012	2,608	4,253	4,485	575	5,517	3,194	176	20,807
	2013	2,504	4,436	5,046	583	6,516	3,592	208	22,883
<b>Total</b>	2011	<b>10,289</b>	<b>17,683</b>	<b>10,557</b>	<b>1,793</b>	<b>4,427</b>	<b>2,232</b>	<b>776</b>	<b>47,757</b>
	2012	<b>13,124</b>	<b>18,148</b>	<b>17,238</b>	<b>2,556</b>	<b>5,905</b>	<b>3,246</b>	<b>1,531</b>	<b>61,749</b>
	2013	<b>16,966</b>	<b>18,994</b>	<b>14,412</b>	<b>1,945</b>	<b>7,206</b>	<b>3,696</b>	<b>1,029</b>	<b>64,247</b>

Table 4. Annual expenditure on R&amp;D by sources of funds

												€000
Sources of funds	GOV			BES			HES			Total		
	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
<b>Local Funds</b>	<b>1,073</b>	<b>1,180</b>	<b>794</b>	<b>24,788</b>	<b>28,700</b>	<b>28,794</b>	<b>13,410</b>	<b>18,900</b>	<b>20,893</b>	<b>39,272</b>	<b>48,780</b>	<b>50,481</b>
Business Enterprise	200	250	250	24,341	27,745	28,361	68	51	37	24,609	28,046	28,648
Direct Government	873	930	544	365	807	346	1,313	3,544	4,570	2,551	5,281	5,460
General University Funds	-	-	-	-	-	-	10,992	14,470	15,423	10,992	14,470	15,423
Others	-	-	-	82	148	87	1,037	835	863	1,119	983	950
<b>Foreign Funds</b>	<b>925</b>	<b>3,568</b>	<b>4,836</b>	<b>6,733</b>	<b>7,494</b>	<b>6,940</b>	<b>827</b>	<b>1,907</b>	<b>1,990</b>	<b>8,486</b>	<b>12,970</b>	<b>13,766</b>
Foreign Business Enterprises	30	30	30	5,581	6,093	5,727	-	-	-	5,611	6,123	5,757
European Commission	895	3,538	4,806	1,112	1,398	1,213	462	1,117	1,181	2,470	6,053	7,200
Others	-	-	-	40	3	-	365	790	809	405	793	809
<b>Total</b>	<b>1,999</b>	<b>4,748</b>	<b>5,630</b>	<b>31,521</b>	<b>36,194</b>	<b>35,734</b>	<b>14,237</b>	<b>20,807</b>	<b>22,883</b>	<b>47,757</b>	<b>61,749</b>	<b>64,247</b>

Table 5. Annual employment in R&amp;D by sector, sex and occupation

Sex and occupation	Government Sector			Business Enterprise Sector			Higher Education Sector			Total		
	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
Full-time	31	35	28	888	876	891	-	-	48	919	911	967
Males	22	30	23	718	691	695	-	-	27	740	721	745
Females	9	5	5	170	185	196	-	-	21	179	190	222
Part-Time*	26	20	20	238	316	194	957	1,075	1,112	1,221	1,411	1,326
Males	17	12	16	194	229	145	577	632	653	788	873	814
Females	9	8	4	44	87	49	380	443	459	433	538	512
<b>Total</b>	<b>57</b>	<b>55</b>	<b>48</b>	<b>1,126</b>	<b>1,192</b>	<b>1,085</b>	<b>957</b>	<b>1,075</b>	<b>1,160</b>	<b>2,140</b>	<b>2,322</b>	<b>2,293</b>
Males	39	42	39	912	920	840	577	632	680	1,528	1,594	1,559
Females	18	13	9	214	272	245	380	443	480	612	728	734
<b>Researchers</b>	<b>38</b>	<b>37</b>	<b>26</b>	<b>558</b>	<b>649</b>	<b>605</b>	<b>665</b>	<b>756</b>	<b>806</b>	<b>1,261</b>	<b>1,442</b>	<b>1,437</b>
Males	22	27	18	436	476	451	466	516	540	924	1,019	1,009
Females	16	10	8	122	173	154	199	240	266	337	423	428
<b>Technicians</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>417</b>	<b>396</b>	<b>336</b>	<b>84</b>	<b>90</b>	<b>103</b>	<b>502</b>	<b>487</b>	<b>440</b>
Males	1	1	1	372	344	303	70	72	83	443	417	387
Females	-	-	-	45	52	33	14	18	20	59	70	53
<b>Support staff</b>	<b>18</b>	<b>17</b>	<b>21</b>	<b>151</b>	<b>147</b>	<b>144</b>	<b>208</b>	<b>229</b>	<b>251</b>	<b>377</b>	<b>393</b>	<b>416</b>
Males	16	14	20	104	100	86	41	44	57	161	158	163
Females	2	3	1	47	47	58	167	185	194	216	235	253

\* Spending a proportion of their working time on R&D activities

Table 6. Annual employment in R&D by major field of science and sector

Type of sector		Natural sciences	Engineering and Technology	Medical sciences	Agricultural sciences	Social sciences	Humanities	Not elsewhere classified	Total
Government Sector	2011	4	4	1	27	18	3	-	57
	2012	5	5	1	32	5	2	5	55
	2013	6	8	-	31	2	1	-	48
Business Enterprise Sector	2011	414	511	57	23	48	4	69	1,126
	2012	442	487	65	17	36	5	140	1,192
	2013	515	420	29	8	46	8	59	1,085
Higher Education Sector	2011	95	190	214	15	275	157	11	957
	2012	102	219	250	18	303	171	12	1,075
	2013	122	230	261	33	332	172	10	1,160
Total	2011	513	705	272	65	341	164	80	2,140
	2012	549	711	316	67	344	178	157	2,322
	2013	643	658	290	72	380	181	69	2,293

Table 7. Annual Government Budget Appropriations or Outlays for Research and Development (GBAORD)

	€000			
Socio-economic objective	2011	2012	2013	2014
Exploration and exploitation of the earth	1,347	26	9	-
Environment	287	1,940	2,032	1,834
Exploration and exploitation of space	-	-	-	-
Transport, telecommunication and other infrastructures	13	18	-	45
Energy	206	66	26	112
Industrial production and technology	2,897	3,945	4,072	3,686
Health	3,195	4,349	4,898	4,294
Agriculture	747	882	733	697
Education	1,455	3,888	2,433	2,084
Culture, recreation, religion and media	2,625	2,165	4,299	3,771
Political and social systems, structures and processes	1,789	2,676	3,011	2,580
General advancement of knowledge	1	4	-	-
Defence	-	-	-	-
<b>Total</b>	<b>14,563</b>	<b>19,960</b>	<b>21,513</b>	<b>19,103</b>

## Methodological Notes

1. Research and Development is defined as creative work undertaken on a systematic basis 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.
2. R&D is classified in four main sectors:
  - *Government Sector (GOV)* - includes all Government Ministries and Departments, offices and other bodies which furnish, but normally do not sell to the community, those services, other than higher education, which cannot otherwise be conveniently and economically provided, as well as those that administer the state and the economic and social policy of the community.
  - *Business Enterprise Sector (BES)* - includes all firms, organisations and institutions whose primary activity is the market production of goods and services (other than higher education) for sale to the general public at economically significant prices.
  - *Higher Education Sector (HES)* - includes all universities, colleges of technology and other institutions of post-secondary education, whatever their source of finance or legal status.
  - *Private Non-Profit Sector (PNP)* - includes non-market, private non-profit institutions serving households and private individuals or households. This sector is not captured as it is considered to be negligible.
3. For the Government and Higher Education sectors, an annual questionnaire is compiled and sent to all the Central Government Ministries and Departments, Extra Budgetary Units, as well as Local Councils.
4. For the Business Enterprise sector, an annual questionnaire is sent to all known active R&D enterprises. From 2010, the data coverage has been increased to cover all the business sector and all employment size classes. For the first time, data collection in respect of 2011 was collected by face-to-face interviews in collaboration with the Malta Council for Science and Technology (MCST).
5. The data contained in this news release have been drawn up in line with the Frascati Manual (2002 edition). The definitions of the fields of science and technology and their sub-fields are available online: [http://nso.gov.mt/en/nso/Sources\\_and\\_Methods/Unit\\_A2/Public\\_Finance/Pages/Research-and-Development-in-Malta-\(Government-Sector\).aspx](http://nso.gov.mt/en/nso/Sources_and_Methods/Unit_A2/Public_Finance/Pages/Research-and-Development-in-Malta-(Government-Sector).aspx)
6. All data in this release should be considered as provisional and therefore subject to revision.
7. More information relating to this news release may be accessed at:

Statistical Concepts: <http://nso.gov.mt/metadata/concepts.aspx>

Metadata: <http://nso.gov.mt/metadata/reports.aspx?id=3> (GOV and HES)

<http://nso.gov.mt/metadata/reports.aspx?id=26> (BES)

### European statistics comparable to data in this News Release are available at:

<http://ec.europa.eu/eurostat/data/database>

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