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In 2012, total expenditure on Research and Development (R&D) amounted to €62.4 million, or 0.91 per cent of GDP.

## Research and Development in Malta: 2010-2012

### R&D Expenditure

During 2012, total expenditure on R&D activities amounted to €62.4 million, an increase of €14.2 million or 29.4 per cent from 2011, as shown in Table 1. The Business Enterprise sector contributed 58.0 per cent to total R&D, whereas the Higher Education and Government sectors contributed 33.4 per cent and 8.6 per cent respectively. The increase in R&D expenditure was the result of higher outlays on capital expenditure of €9.7 million, mainly investments in R&D facilities, including the Life Sciences Centre, classified within the Government sector. Labour costs represented 51.8 per cent of total expenditure, whereas other recurrent expenditure and capital projects had a share of 26.8 per cent and 21.4 per cent respectively.

As shown in Table 3, in 2012, the highest rate of R&D activity was recorded in Engineering and Technology, which accounted for 29.1 per cent of total expenditure, followed by Medical Sciences (27.6 per cent) and Natural Sciences (21.0 per cent). Year-on-year comparisons show that all fields of sciences registered higher R&D expenditure, the major increases being recorded in Medical and Natural Sciences by €6.7 million and €2.8 million respectively.

Most R&D activity in Engineering and Technology, Medical Sciences and Natural Sciences was undertaken in business enterprises, whereas research in relation to Social Sciences and Humanities was mainly carried out by the Higher Education sector (Table 3).

Table 4 classifies expenditure on R&D by source of funds. Each sector mostly funds its own research, supplemented by foreign funds, mainly foreign business enterprise funds for the Business Enterprise sector and EU funds for the Higher Education and Government sectors. Foreign funds for R&D reached €13.3 million, or 21.3 per cent of total funds.

### R&D Employment

In 2012, 2,353 employees were engaged in R&D work, of whom 1,422 dedicated part of their time to R&D. The highest R&D employment rate was registered in the Business Enterprise sector, with 1,192 employees, followed by the Higher Education sector, with 1,075 employees. Researchers and Technicians were predominantly males.

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As shown in Table 6, in 2012, the highest employment activity was recorded in the field of Engineering and Technology with 711 employees, followed by Natural and Social Sciences, with 549 and 345 employees respectively.

Table 7 shows the Government Budget Appropriations for R&D (GBAORD) by socio-economic objective. For 2013, the highest outlays were recorded for R&D activities related to Health (€5.0 million), Culture, Recreation, Religion and Media (€4.3 million) and Industrial Production and Technology (€4.1 million) ■

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**Table 1. Total R&D Expenditure as a % of GDP\***

	€000s		
	2010	2011	2012
Government Sector (GOV)	1,758	2,474	5,388
Business Enterprise Sector (BES)	26,157	31,521	36,194
Higher Education Sector (HES)	14,292	14,236	20,807
<b>Total R&amp;D expenditure</b>	<b>42,207</b>	<b>48,232</b>	<b>62,390</b>
<b>% of GDP*</b>	<b>0.65</b>	<b>0.72</b>	<b>0.91</b>

\* Source: Gross Domestic Product as published in News Release No. 108/2014

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

	€000s			
	GOV	BES	HES	Total
<b>2010</b>				
<b>Recurrent Expenditure</b>	<b>1,473</b>	<b>24,687</b>	<b>10,884</b>	<b>37,044</b>
Labour Costs	991	17,562	8,370	<b>26,923</b>
Other Recurrent Expenditure	482	7,125	2,514	<b>10,121</b>
<b>Capital Expenditure</b>	<b>285</b>	<b>1,470</b>	<b>3,408</b>	<b>5,163</b>
Land and Buildings	260	38	1,109	<b>1,406</b>
Instruments and Equipment	26	1,432	2,299	<b>3,757</b>
<b>Total Expenditure</b>	<b>1,758</b>	<b>26,157</b>	<b>14,292</b>	<b>42,207</b>
<b>2011</b>				
<b>Recurrent Expenditure</b>	<b>1,480</b>	<b>30,275</b>	<b>12,795</b>	<b>44,550</b>
Labour Costs	911	19,608	9,974	<b>30,494</b>
Other Recurrent Expenditure	568	10,667	2,821	<b>14,056</b>
<b>Capital Expenditure</b>	<b>994</b>	<b>1,246</b>	<b>1,441</b>	<b>3,681</b>
Land and Buildings	954	125	1,232	<b>2,311</b>
Instruments and Equipment	41	1,121	209	<b>1,370</b>
<b>Total Expenditure</b>	<b>2,474</b>	<b>31,521</b>	<b>14,236</b>	<b>48,232</b>
<b>2012</b>				
<b>Recurrent Expenditure</b>	<b>1,572</b>	<b>31,601</b>	<b>15,868</b>	<b>49,042</b>
Labour Costs	994	19,558	11,761	<b>32,313</b>
Other Recurrent Expenditure	578	12,044	4,106	<b>16,728</b>
<b>Capital Expenditure</b>	<b>3,816</b>	<b>4,593</b>	<b>4,939</b>	<b>13,348</b>
Land and Buildings	3,757	3,182	3,987	<b>10,925</b>
Instruments and Equipment	59	1,411	953	<b>2,423</b>
<b>Total Expenditure</b>	<b>5,388</b>	<b>36,194</b>	<b>20,807</b>	<b>62,390</b>

Table 3. Total expenditure on R&amp;D by major field of science

€000s

		Natural sciences	Engineering and Technology	Medical sciences	Agricultural sciences	Social sciences	Humanities	Not elsewhere classified	Total
Government Sector	2010	115	38	216	1,130	226	30	3	1,758
	2011	56	52	789	1,248	245	80	3	2,474
	2012	66	135	3,219	1,825	53	15	76	5,388
Business Enterprise Sector	2010	6,910	12,946	5,441	117	115	9	620	26,157
	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
Higher Education Sector	2010	1,636	4,039	3,251	153	3,207	1,905	102	14,292
	2011	1,480	3,207	3,287	261	3,740	2,142	120	14,236
	2012	2,608	4,253	4,485	575	5,517	3,194	176	20,807
Total	2010	8,661	17,024	8,907	1,399	3,548	1,944	725	42,207
	2011	10,289	17,683	10,557	2,269	4,427	2,232	776	48,232
	2012	13,124	18,148	17,238	3,197	5,905	3,246	1,531	62,390

Table 4. Source of funds of R&amp;D expenditure

€000s

	GOV			BES			HES			Total		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
<b>Sources of Funds</b>												
<b>Local Funds</b>	1,159	1,294	1,482	22,549	24,788	28,700	13,548	13,409	18,900	37,256	39,491	49,082
Business Enterprise	200	200	250	22,407	24,341	27,745	24	68	51	22,630	24,609	28,046
Direct Government	959	1,094	1,232	110	365	807	3,357	1,313	3,544	4,426	2,772	5,583
General University Funds	0	0	0	0	0	0	9,625	10,992	14,470	9,625	10,992	14,470
Others	0	0	0	32	82	148	542	1,036	835	575	1,118	983
<b>Foreign Funds</b>	599	1,180	3,907	3,608	6,733	7,494	744	827	1,907	4,951	8,740	13,308
Foreign Business Enterprises	30	30	30	3,029	5,581	6,093	0	0	0	3,059	5,611	7,240
European Commission	559	1,140	3,867	532	1,112	1,398	377	462	1,117	1,468	2,715	6,055
Others	10	10	10	47	40	3	367	365	790	424	415	803
<b>Total</b>	1,758	2,474	5,388	26,157	31,521	36,194	14,292	14,236	20,807	42,207	48,232	62,390

Table 5. Total employment in R&amp;D

	Government Sector			Business Enterprise Sector			Higher Education Sector			Total		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
<b>Total</b>	<b>78</b>	<b>78</b>	<b>86</b>	<b>825</b>	<b>1,126</b>	<b>1,192</b>	<b>933</b>	<b>957</b>	<b>1,075</b>	<b>1,836</b>	<b>2,161</b>	<b>2,353</b>
Males	53	54	66	673	912	920	563	577	632	1,289	1,543	1,618
Females	25	24	20	152	214	272	370	380	443	547	618	735
Full-time	46	47	55	682	888	876	0	0	0	728	935	931
Males	33	32	43	557	718	691	0	0	0	590	750	734
Females	13	15	12	125	170	185	0	0	0	138	185	197
Part-Time*	32	31	31	143	238	316	933	957	1,075	1,108	1,226	1,422
Males	20	22	23	116	194	229	563	577	632	699	793	884
Females	12	9	8	27	44	87	370	380	443	409	433	538
<b>Researchers</b>	<b>47</b>	<b>50</b>	<b>46</b>	<b>359</b>	<b>558</b>	<b>649</b>	<b>671</b>	<b>665</b>	<b>756</b>	<b>1,077</b>	<b>1,273</b>	<b>1,451</b>
Males	25	29	31	282	436	476	467	466	516	774	931	1,023
Females	22	21	15	77	122	173	204	199	240	303	342	428
<b>Technicians</b>	<b>13</b>	<b>9</b>	<b>4</b>	<b>345</b>	<b>417</b>	<b>396</b>	<b>74</b>	<b>84</b>	<b>90</b>	<b>432</b>	<b>510</b>	<b>490</b>
Males	12	9	4	308	372	344	62	70	72	382	451	420
Females	1	0	0	37	45	52	12	14	18	50	59	70
<b>Support staff</b>	<b>18</b>	<b>19</b>	<b>36</b>	<b>121</b>	<b>151</b>	<b>147</b>	<b>188</b>	<b>208</b>	<b>229</b>	<b>327</b>	<b>378</b>	<b>412</b>
Males	16	16	31	83	104	100	34	41	44	133	161	175
Females	2	3	5	38	47	47	154	167	185	194	217	237

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

Table 6. R&amp;D employment by major field of science

		Natural sciences	Engineering and Technology	Medical sciences	Agricultural sciences	Social sciences	Humanities	Not elsewhere classified	Total
Government Sector	2010	6	4	1	42	19	5	1	78
	2011	4	4	1	48	18	3	0	78
	2012	5	5	1	62	6	2	5	86
Business Enterprise Sector	2010	299	431	27	5	22	4	37	825
	2011	414	511	57	23	48	4	69	1,126
	2012	442	487	65	17	36	5	140	1,192
Higher Education Sector	2010	102	191	203	14	258	156	9	933
	2011	95	190	214	15	275	157	11	957
	2012	102	219	250	18	303	171	12	1,075
Total	2010	407	626	231	61	299	165	47	1,836
	2011	513	705	272	86	341	164	80	2,161
	2012	549	711	316	97	345	178	157	2,353

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

	€000s			
Socio-economic objective	2010	2011	2012	2013
Exploration and exploitation of the earth	0	1,347	26	35
Environment	1,801	287	1,940	2,031
Exploration and exploitation of space	0	0	0	0
Transport, telecommunication and other infrastructures	0	13	18	0
Energy	168	206	66	58
Industrial production and technology	3,906	2,897	3,945	4,072
Health	3,111	3,195	4,349	4,964
Agriculture	769	968	1,184	1,103
Education	1,234	1,455	3,888	2,463
Culture, recreation, religion and media	2,155	2,625	2,165	4,299
Political and social systems, structures and processes	1,491	1,789	2,676	3,026
General advancement of knowledge	2	1	4	5
Defence	0	0	0	0
<b>TOTAL</b>	<b>14,637</b>	<b>14,784</b>	<b>20,262</b>	<b>22,056</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 was compiled and sent to 179 units, encompassing 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. As from 2011 data 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://www.nso.gov.mt/site/page.aspx?pageid=199>
6. All data in this release should be considered as provisional and therefore subject to revision.

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

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