



**Palestinian National Authority  
Palestinian Central Bureau of Statistics**

**Press Release  
Main Findings of Research and Development  
Statistics, 2010**

**November, 2011**

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TABLES ARE PRINTED IN ARABIC FORMAT (FROM RIGHT TO LEFT).

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## **Note for Users**

- Some indicators were estimated on the basis of previous rates, such as spending on research and development by enterprises that did not respond to these questions, and these estimates were checked for consistency with organizations of a similar size and activity.
- Studies are considered as part of research and development activities in this report.
- Data represent the enterprises which completed the survey interview.



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## **Main Results of Research & Development Statistics in the Palestinian Territory, 2010**

- **There were 2,348 researchers.**
- **Studies form 56% of R&D activities.**
- **Total expenditure on R&D was US\$35 million.**

PCBS collected data on research and development (R&D) from the administrative records of R&D establishments in the first ever survey in the Palestinian Territory.

A total of 84 establishments were interviewed: 17 establishments failed to contribute since 11 of them were not in operation during the reference period, five refused to cooperate in the survey, and one establishment provided incomplete data. Interviews were completed in 67 establishments. The findings below represent only the establishments for which complete data were collected during the third quarter of 2010. The data cover human resources in R&D, the type of research and its purpose, the amount spent on each type of research, and the most important achievements, such as the number of patents or the publication of the research locally and internationally.

The main findings were as follows:

### **R&D Personnel**

In 2010, there were 3,790 employees in R&D, representing 2,072 full-time equivalent (FTE) workers. There were 2,348 researchers, which represent 1,312 FTE researchers. There were 324 FTE researchers per million inhabitants. There were 1,763 male researchers and 585 female researchers.

### **R&D Output**

The major output of R&D in 2010 was as follows: 71 local and international awards, 559 studies published in journals, and 803 studies published in local magazines. Research was distributed by field of research as follows: 56% studies and consultations, 25.4% basic research, 12% applied research, and 6.6% experimental research.

### **Expenditure on R&D**

Total expenditure on R&D was US\$35 million, representing US\$26,700 per FTE researcher. The governmental sector contributed 42% of all R&D expenditure, non-governmental organizations contributed 22%, and higher education contributed 36% of total expenditure on R&D.



## Concepts and Definitions

### **Citation Index:**

A reference to a book, article, web page, or other published item with sufficient detail to identify the item uniquely. Unpublished writings or speech, such as working papers and personal communications, are also sometimes cited.

### **Fields of Science:**

In accordance with the International Standardization of Statistics on Science and Technology Manual (UNESCO, 1978) and the Frascati Manual (OECD, 2002), the fields of science are as follows:

**Natural Sciences:** Include Mathematics and Computer Sciences, Physical Sciences, Chemical Sciences, Earth and related Environmental Sciences and Biological Sciences.

**Engineering and Technology:** Include Civil Engineering, Electrical Engineering, Electronics, and other Engineering Sciences.

**Medical Sciences:** Include Basic Medicine, Clinical Medicine, and Health Sciences.

**Agricultural Sciences:** Include Agriculture, Forestry, Fisheries and Allied Sciences, and Veterinary Medicine.

**Social Sciences:** Include Psychology, Economics, Educational Sciences, and other Social Sciences.

**Humanities:** Include History, Languages and Literature, and other Humanities.

### **Full-Time Equivalent (FTE):**

The percentage of time spent by a person throughout the year on research and experimental development. Thus, a person who normally spends 30% of their time on R&D and the rest on other activities (such as teaching, university administration, and student counseling) should be considered as 30% FTE. Similarly, if a full-time R&D worker is employed at an R&D unit for only six months, this results in an FTE of 50%. For reporting purposes, the total sum of FTEs should be rounded to the next integer and the reporting of decimals avoided.

### **International Standard Book Number (ISBN):**

The individual number given to each book for it to be identified via the publisher, address, number and date of printing, including a category number in addition to that relating to the publisher. The ISBN figure consists of ten digits preceded by the letters ISBN and divided into four groups separated by a hyphen.

### **R&D Expenditure:**

All R&D expenditure during a specific period of time, which is one full year, was as follows:

**Current Expenditure:** Includes labour costs – annual wages and salaries and all associated costs of researchers, technicians and support staff; plus other current costs, such as non-capital purchase of materials, supplies and R&D equipment i.e., water, fuel, gas, electricity, books, journals, reference materials, subscriptions to libraries or scientific societies, materials for laboratories.

**Capital Expenditure:** Includes maintenance and repair of buildings, construction, appliances and equipment, office furniture, and other capital expenditure.

**Research and Experimental Development (R&D):**

Comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humanity and culture and society, and the use of this knowledge to devise new applications. The term R&D covers three activities: basic research, applied research, and experimental development:

**Basic Research:** 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.

**Applied Research:** Original investigation undertaken in order to acquire new knowledge but directed primarily towards a specific practical aim or objective.

**Experimental Development:** Systematic work drawing on existing knowledge gained from research and/or practical experience and directed towards producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

**Studies and Consultations:**

These are considered as part of R&D and its activities. The number of studies and consultations, staff, and expenditures are included in this report.

**R&D Personnel:**

All persons employed directly in R&D and persons providing an indirect service, such as general service employees and skilled staff, and classified as follows:

**Administrators:** Persons engaged in the management and administration of a business, such as managers, accountants, administrative staff.

**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 PhD level (ISCED level 6) engaged in R&D should be considered as researchers.

**Technicians and Equivalent:** Persons whose main tasks require technical knowledge and experience in one or more fields of engineering, physical and life sciences (technicians) or social sciences and humanities (equivalent staff). They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under the supervision of researchers.

**Other Support Staff:** Include skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects or directly associated with (or providing services to researchers involved in) such projects.

**Reference Date:**

The date referred to in the calculation of all sets of indicators in this survey is from 01 January 2010 to 31 December 2010.

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**Table 1: Main Indicators For R&D in the Palestinian Territory, 2010**

Indicator	Value	
Number of R&D Personnel	3,790	
Number of R&D Personnel with Full – Time Equivalent (FTE)	2,072	
Number of Researchers in R&D	2,348	
Number of Researchers (Males) in R&D	1,763	
Number of Researchers (Females) in R&D	585	
Number of Researchers in R&D with FTE	1,312	
Number of Researchers in R&D with FTE Per Million inhabitants	324	
Total Expenditure on R&D (million\$)	35	(            )
Percentage of External Funds for R&D	39.2	
Expenditure on R&D Per Researcher with FTE (Thousands \$)	26.7	(            )

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**Table 2: R&D Personnel in the Palestinian Territory by Occupation and Sex, 2010**

Sex	Total	Occupation الوظيفة			
		Others	Technicians	Researchers	Administrators
Males	2,772	230	340	1,763	439
Females	1,018	55	145	585	233
<b>Both Sexes</b>	<b>3,790</b>	<b>285</b>	<b>485</b>	<b>2,348</b>	<b>672</b>

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**Table 3: R&D Personnel in the Palestinian Territory by Occupation and Full – Time Equivalent, 2010**

Full – Time Equivalent	Total	Occupation				مكافئ الوقت التام
		Others	Technicians	Researchers	Administrators	
Less than 10%	299	57	54	101	87	أقل من 10%
10 - 30%	1,218	100	114	806	198	10 - 30%
31 - 50%	418	33	38	292	55	31 - 50%
51 - 70%	252	24	32	144	52	51 - 70%
71 - 90%	181	24	28	83	46	71 - 90%
91 - 100%	1,422	47	219	922	234	91 - 100%
<b>Total</b>	<b>3,790</b>	<b>285</b>	<b>485</b>	<b>2,348</b>	<b>672</b>	

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**Table 4: R&D Personnel in the Palestinian Territory by Occupation and Educational Attainment, 2010**

Educational Attainment	Total	Occupation			
		Others	Technicians	Researchers	Administrators
Secondary and Less	113	90	11	0	12
Associate Diploma	304	76	142	13	72
Bachelor	1,174	102	256	450	365
Higher Diploma	62	2	23	10	27
Master	806	8	53	613	132
Ph.D.	1,332	6	0	1,262	64
<b>Total</b>	<b>3,790</b>	<b>285</b>	<b>485</b>	<b>2,348</b>	<b>672</b>

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**Table 5: R&D Personnel in the Palestinian Territory by Sector of Employment and Occupation, 2010**

Sector of Employment	المجموع Total	Occupation			
		اخرين Others	الفنيون Technicians	Researchers	Administrators
Governmental	808	127	180	334	167
Non Governmental Organizations	627	39	47	403	138
Higher Education	2,355	120	257	1,611	367
<b>Total</b>	<b>3,790</b>	<b>285</b>	<b>485</b>	<b>2348</b>	<b>672</b>

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**Table 6: R&D Personnel in the Palestinian Territory by Sector of Employment and Sex, 2010**

Sector of Employment	Total	Sex		قطاع التوظيف
		ذكور Males	إناث Females	
Governmental	808	576	232	
Non Governmental Organizations	627	308	319	
Higher Education	2,355	1888	467	
<b>Total</b>	<b>3,790</b>	<b>2772</b>	<b>1018</b>	

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**Table 7: Researchers in R&D in the Palestinian Territory by Fields of Science, 2010**

Field of Science	عدد الباحثين No. of Researchers	
Physical Sciences	327	
Engineering & Technology	290	
Medical Sciences	151	
Agricultural Sciences	68	
Social Sciences	557	
Humanities Sciences	955	
<b>Total</b>	<b>2348</b>	

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**Table 8: Outputs of R&D in the Palestinian Territory by Type, 2010**

Outputs	Number	
National Prizes for Researchers and Inventors	44	
International Prizes for Researchers and Inventors	27	
Patents	9	
Publications in National Magazines	803	
Publications in Peer review Magazines	559	
National Researches	836	
International Researches	254	
International Standard Book Number (ISBN)	127	
Citation Index	15	

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**Table 9: Percentage Distribution of Researches in the Palestinian Territory by Type, 2010**

Type of Research	Percentage	
Studies and Consultations	56.0	( / )
Basic Researches	25.4	
Applied Researches	12.0	
Experimental Development Researches	6.6	
<b>Total</b>	<b>100</b>	

جدول 10: قيمة الإنفاق على البحث والتطوير (ألف دولار الأمريكي) وتوزيعه النسبي في الأراضي الفلسطينية حسب قطاع التوظيف، 2010

**Table 10: Value of Expenditure (1000 US\$) and Percentage Distribution on R&D in the Palestinian Territory by Sector of Employment, 2010**

Sector of Employment	Percentage	Value	
Governmental	42.0	14,712	
Non Governmental Organizations	22.0	7,699	
Higher Education	36.0	12,593	
<b>Total</b>	<b>100</b>	<b>35,004</b>	