

Media Release

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The National Expenditure on Civilian R&D 2023

- The National Expenditure on Civilian R&D decreased by 1.4% in constant prices in 2023.
- National expenditure on civilian R&D in 2023 amounted to NIS 119.3 billion – 6.3% of the GDP (6.1% in 2022).
- The national expenditure on civilian R&D per capita in Israel in 2023 amounted to 3,458.7 dollars (at current prices, in PPP terms of GDP). It was one of the highest in OECD member countries, mainly due to a high concentration of development centers of multi-national companies in Israel.
- In the Business sector, the R&D expenditure decreased by 1.5%, at constant prices, in 2023, in contrast to increases of 14.6% in 2022 and 13.7% in 2021.
- In 2022, 45.4% of the expenditure on R&D was financed by Funds from Abroad and 47.2% – by the Business sector.
- In 2023, the share of grants for the advancement of general research (mainly including GUF – Government University Funds) amounted to 52.3% and the share for advancement of industrial technology amounted to 34.1%.

Definitions and Explanations

Research and development (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 knowledge to devise new applications.

National expenditure on civilian R&D, at current prices, amounted to NIS 119.3 billion in 2023, and comprised 6.3% of the GDP. According to provisional estimates, in 2023, the national expenditure on civilian R&D, at constant prices, decreased by 1.4%, in contrast to increases of 13.6% in 2022 and of 12.6% in 2021.

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Diagram 1- National Expenditure on Civilian R&D, at 2015 Prices, 1996-2023*

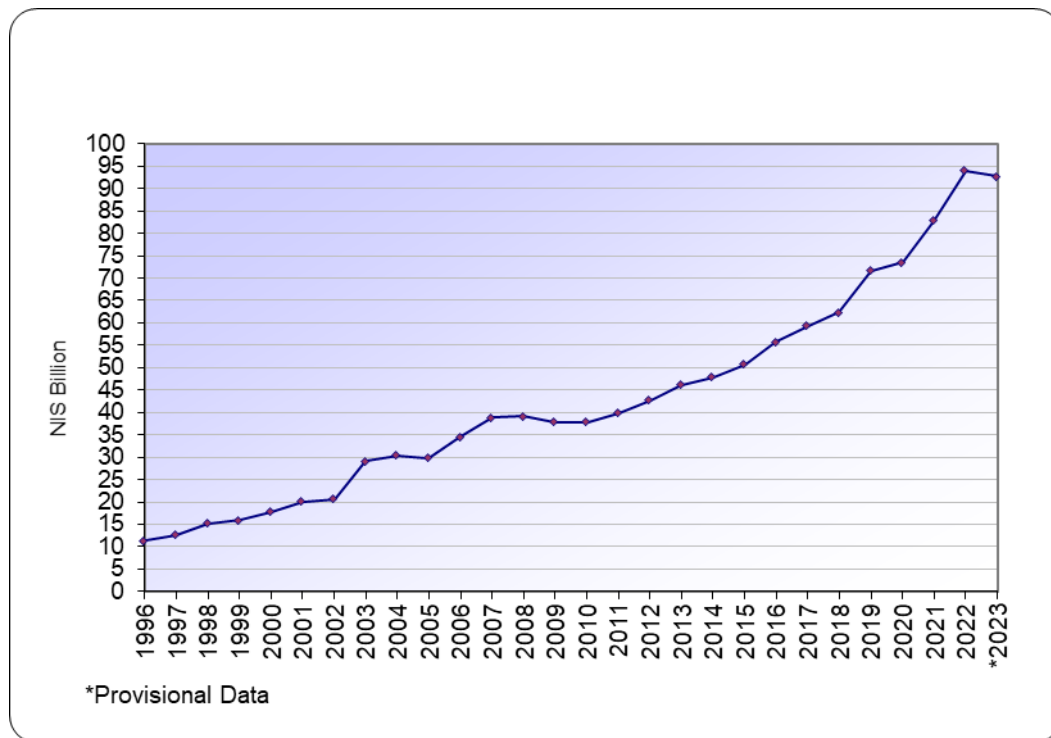


Table A - National Expenditure on Civilian R&D According to Selected Macro-economic Indicators, 2015-2023*

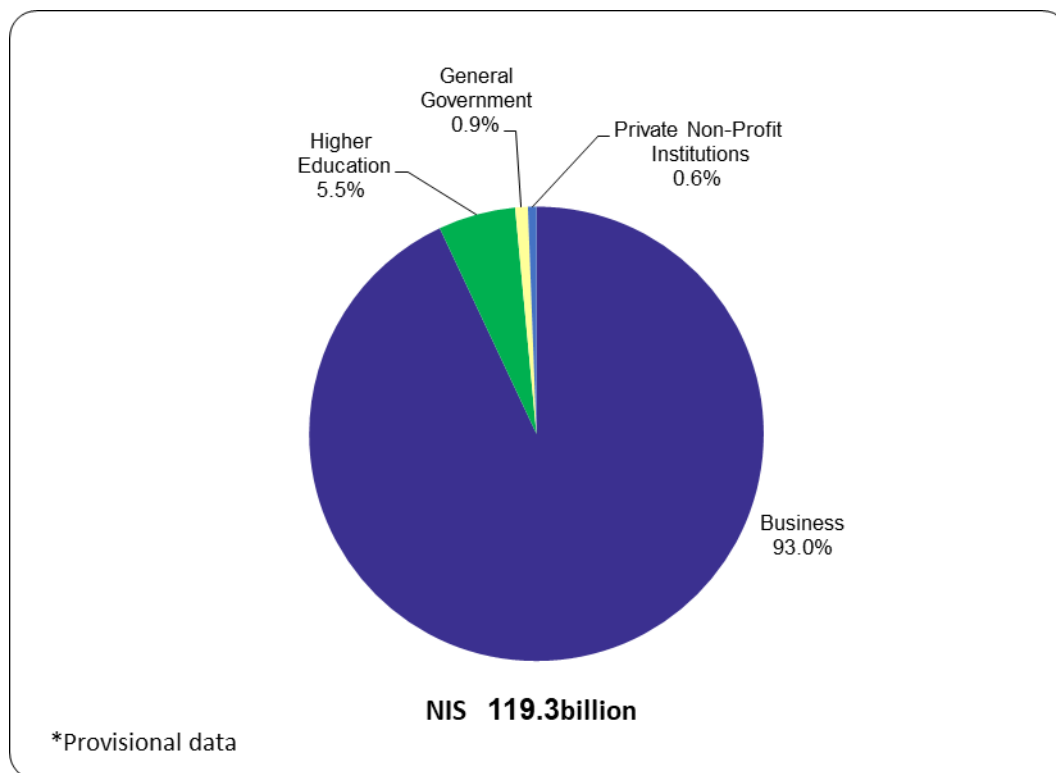
National expenditure on civilian R&D, as a percentage of each indicator

Indicator	2015	2016	2017	2018	2019	2020	2021	2022	2023*
Annual change at constant prices	5.9	10.1	6.3	5.2	14.8	2.6	12.6	13.6	-1.4
Gross domestic product	4.3	4.6	4.7	4.9	5.4	5.8	5.7	6.1	6.3
Net domestic product	5.1	5.4	5.5	5.8	6.3	6.9	6.7	7.2	7.5
Gross domestic fixed capital formation	20.2	20.4	21.3	21.0	23.2	25.6	24.1	24.6	26.0
Gross domestic capital formation in the economic industries (excl. residential buildings)	29.3	29.0	30.6	29.3	32.4	35.1	33.5	34.9	35.5
Business Sector – annual change at constant prices	6.8	11.8	6.6	5.7	16.5	3.2	13.7	14.6	-1.5
Business Sector as a percentage of gross fixed capital formation	16.6	17.3	18.0	18.0	20.1	21.5	20.4	20.8	22.5

* Provisional data

The expenditure on civilian R&D (at current prices), performed by the Business sector amounted to NIS 110.9 billion in 2023, comprising 93.0% of the total national expenditure on R&D. The remainder was expenditure on R&D carried out by Higher education institutions (5.5%), the General government sector (0.9%) and Private non-profit institutions (0.6%).

Diagram 2 - National Expenditure on Civilian R&D at Current Prices, by Operating Sector
2023*



Civilian R&D Expenditure in the Business Sector

The expenditure on R&D in the business sector in 2023 decreased by 1.5%, at constant prices, in contrast to increases of 14.6% in 2022, and 13.7% in 2021.

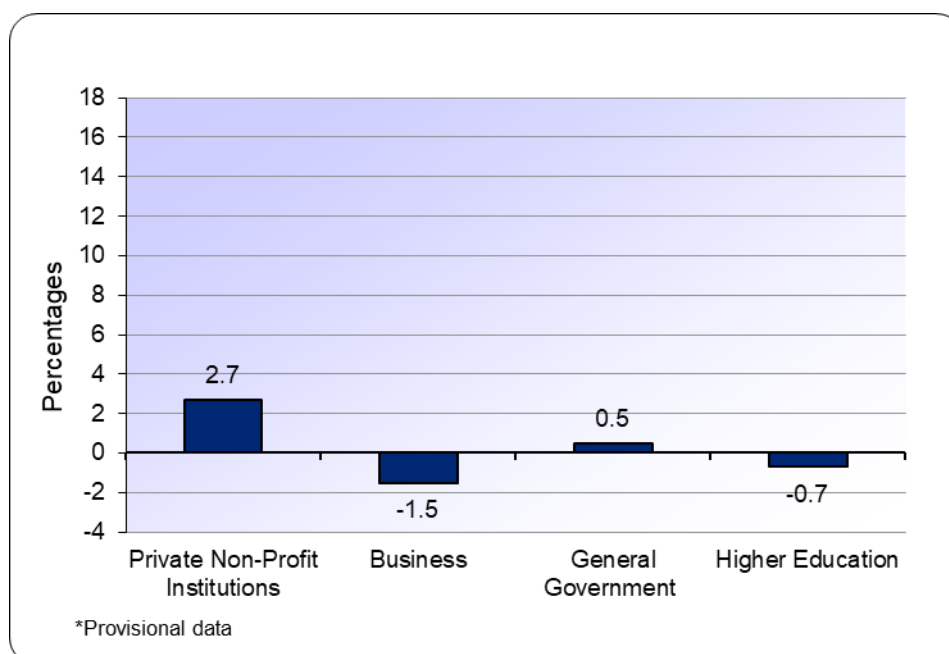
The Business Sector mainly includes: Computer programming, consultancy and related activities (Software), Scientific research and development (R&D) and Manufacturing industries.

In 2023, the expenditure on R&D in Computer programming, consultancy and related activities (Software) decreased by 0.9%, at constant prices. The expenditure in Scientific research and development (R&D), including start-up companies, international R&D centres, technological incubators and research institutes, decreased by 0.5% at constant prices, in Manufacturing industries the expenditure decreased by 4.8%, at constant prices.

Civilian R&D Expenditure in Other Sectors

In 2023, the expenditure on R&D in the General government sector increased by 0.5% compared to the previous year, at constant prices, following a decrease of 1.0% in 2022. In Higher education institutions, the expenditure decreased by 0.7%, at constant prices, following an increase of 2.8% in 2022. The expenditure in Private non-profit Institutions increased by 2.7%, at constant prices, following a decrease of 0.9% in 2022.

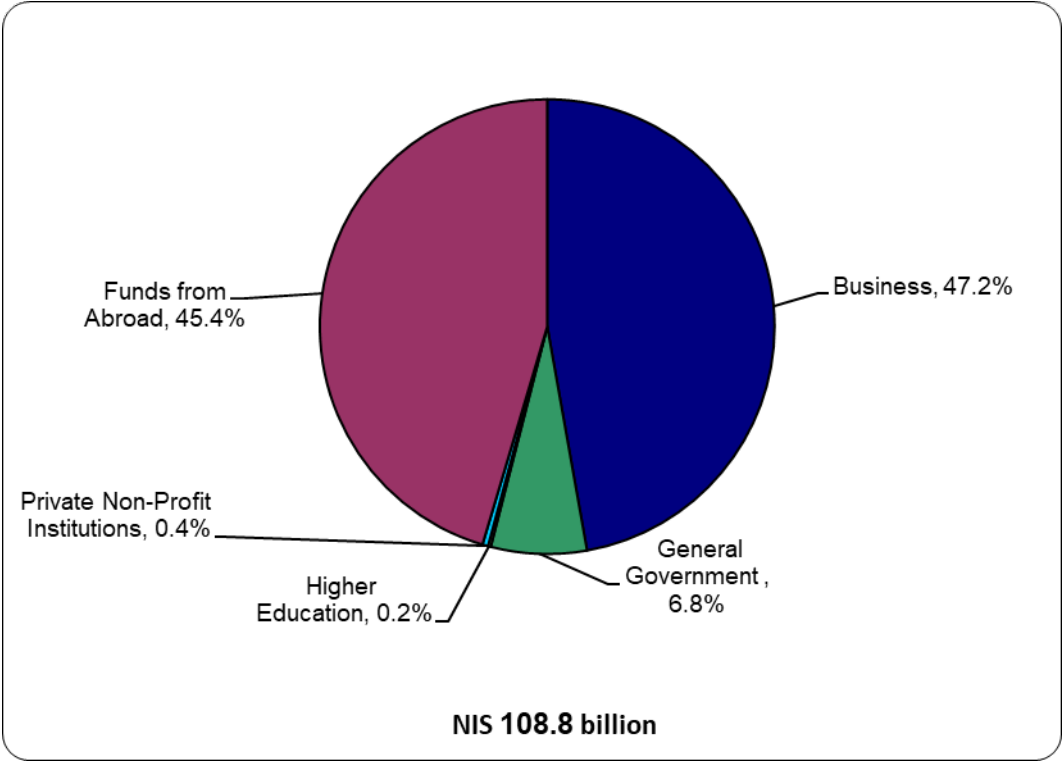
**Diagram 3 - National Expenditure on Civilian R&D, by Operating Sector
Percentage Change in 2023* Compared to 2022, at Constant Prices**



The Major R&D Financing Sources – Funds from Abroad and the Business Sector

The recent data on the distribution of financing, for 2022, show that the Business sector financed 47.2% of all civilian R&D expenditure in Israel, an increase compared to 2021 (45.0%). Funds from abroad financed 45.4% of the civilian R&D expenditure in 2022 compared to 46.4% in 2021. The financing from abroad was allocated mainly to the business sector. The General government sector financed, mainly through transfers to higher education institutions and by self-financing, 6.8% of the expenditure compared to 7.9% in 2021. Private non-Profit Institutions financed 0.4% of the total expenditure, compared to 0.5% in 2021. Higher education institutions financed 0.2% of the total national expenditure.

Diagram 4 - National Expenditure on Civilian R&D, by Financing Sector, 2022



R&D Personnel in the Business Sector

In 2022, 145,026 employees worked in research and development in the business sector, an increase of 6.2% compared to 2021 (including employees in R&D in general hospitals).

Of them 137,607 worked in full time equivalent jobs, an increase of 8.4% compared to 2021.

The distribution of employees by level of education (excluding employees in R&D in general hospitals) shows that in 2022, 4.6% had a Ph.D. degree, 79.9% had first degree or second degree, 7.6% were practical engineers and technicians and 7.8% had other education.

R&D Finance by Government Ministries, including GUF (General University Funds)

Government ministries' expenditure on civilian R&D amounted to NIS 10.0 billion in 2023. The expenditure included performing of research, purchasing of R&D from external factors and transfers for financing of R&D in other sectors, including General University Fund.

The distribution of the expenditure on R&D of government ministries (excluding General University Fund) shows that 11.7% out of total expenditure was for intramural expenditure and was mainly operated by the Ministry of Agriculture and Rural Development (70.1%). 11.6% of the expenditure was for purchasing of R&D from external factors and 76.7% were transfers to finance R&D performed in all sectors (including performance abroad).

Most R&D funding of the government ministries, excluding General University Fund, came from the Ministry of Economy and Industry (66.9%). 33.9% of the total funding of the Ministry of Economy and Industry was allocated to the business sector.

The breakdown of expenditures on civilian R&D of government ministries, including General University Fund, by objectives shows that in 2023 the share of grants for the advancement of general research, which mainly includes the finance of the General University Funds and is oriented to the universities, amounted to 52.3%. Expenditures for advancement of industrial technology amounted to 34.1%. The main expenditure of this category were grants awarded by the Ministry of Economy and Industry to industrial companies. Of R&D expenditure in 2023, 4.3% were allocated to development of agriculture; 3.8% of the expenditure were allocated to development of infrastructure (including research on transportation and on urban and rural planning) and 2.6% were allocated for research in social services – education, labor, social welfare, immigrant absorption, etc.

**Table B - Government Ministries' Expenditure, By Objective, at Current Prices
(Including General University Funds – GUF)**

Percentages, unless otherwise stated

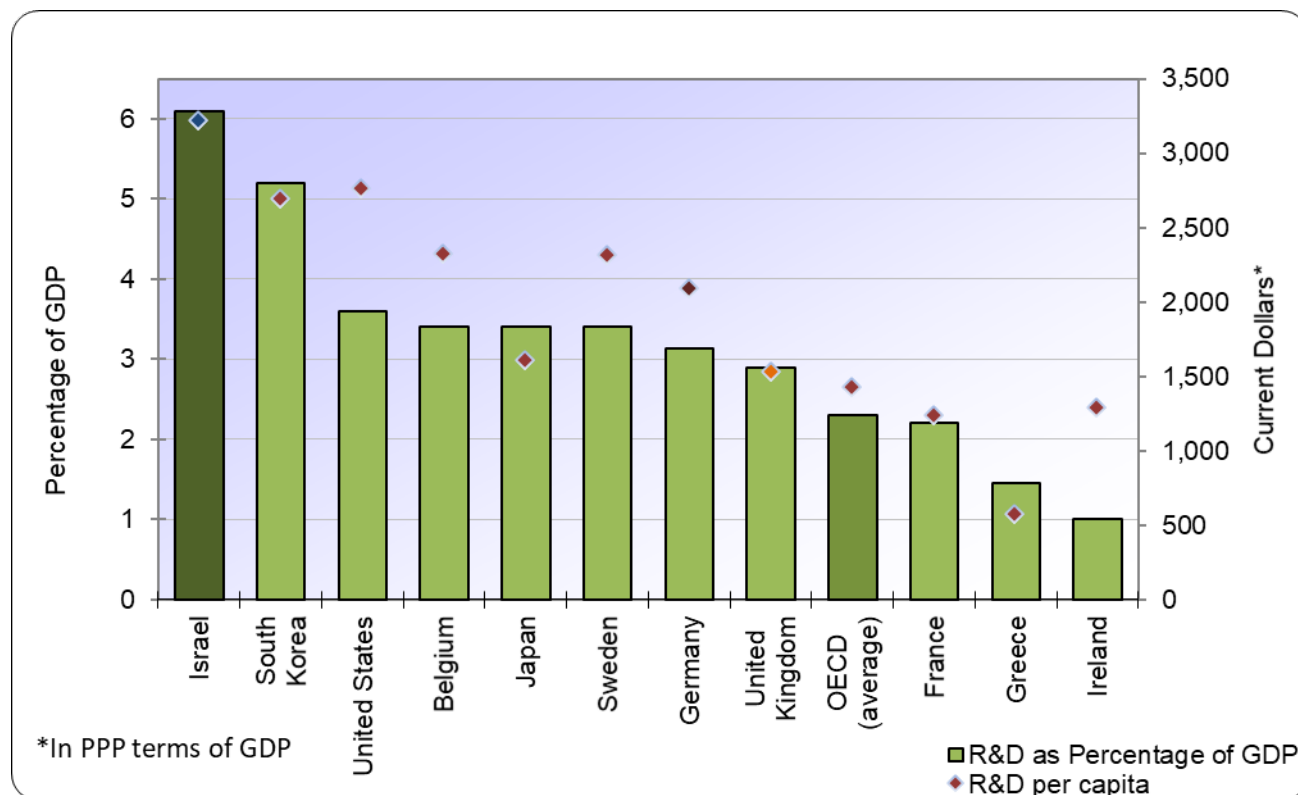
Objective	2015	2016	2017	2018	2019	2020	2021	2022	2023*
Total (NIS Million)	7,211	7,576	7,759	8,295	8,485	9,436	8,816	9,393	10,370
Total	100	100	100	100	100	100	100	100	100
Advancement of general research (including GUF)	57	53	56	55	55	53	57	54	52
Advancement of industrial technology	29	32	29	30	30	33	30	33	34
Agriculture, forestry & fishing	5	6	6	6	5	5	5	5	4
Social services	3	3	3	3	3	2	2	2	3
Infrastructure development	2	2	2	2	3	3	3	3	4
All the rest	4	4	4	4	4	4	3	3	3

* Provisional data

National Expenditure on Civilian R&D in Israel – A Comparison to OECD Member Countries

In 2022, the national expenditure on civilian R&D in Israel, as a percentage of the GDP, was 6.1% – the highest among all OECD member countries. The national expenditure on civilian R&D per capita, in Israel, which amounted to 3,217.9 dollars (at current prices, in PPP¹ terms of GDP), was one of the highest in OECD member countries.

Diagram 5 - National Expenditure on Civilian R&D – An International Comparison, 2022



¹ Purchasing Power Parity (PPP) is a special exchange rate which can be used to deduct the differences in price levels between countries. With the amount of money that was replaced using Purchasing Power Parity (PPP), it is possible to buy an identical basket of goods and services in all countries. In this way we can estimate the purchasing power of different currencies on a uniform basis.

DEFINITIONS AND EXPLANATIONS

Research and development (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 knowledge to devise new applications.

The definitions and classifications in this publication are based on the recommendations in the Frascati Manual² of the OECD for measuring expenditure on R&D, so the data on Israel are comparable to those of the OECD countries.

In the estimate of the national expenditure on R&D presented here, defence R&D was excluded. Defence R&D includes all R&D activities for military purposes, irrespective of their contents or secondary civilian applications.

The operating and financing R&D units in Israel were classified into the following sectors:

- (a) Business** – The Business Sector includes the following industries: Agriculture; Afforestation and Fishing; Manufacturing; Electricity and Water Supply; Construction; Commerce; Accommodation Services and Restaurants; Transport, Storage and Communications; Financing and Business Services; Personal and Other Services, including the general hospitals. The Business Sector includes all establishments, both privately and publicly owned, as well as business companies which are not defined as companies, such as the Public Printer. Not included are general government services, local authorities, non-profit institutions and households.
- (b) General Government** – broadly defined, includes government ministries, local authorities, national institutions, the National Insurance Institute and non-profit institutions financed mainly by government.

Higher education institutions are considered as a separate sector because of their intensive R&D activity. The general hospitals that were included in the General Government sector, were classified as part of the Business sector.
- (c) Higher Education Institutions** – include the following institutions and research establishments associated with them: The Hebrew University, Tel Aviv University, Bar-Ilan University, Haifa University, Ben Gurion University of the Negev, Ariel University, Technion – Israel Institute of Technology, and the Weizmann Institute of Science.
- (d) Private Non-Profit Institutions** – include institutions which operate on a non-profit basis, and whose main source of financing is not governmental. R&D financing by households, such as donations, is presented together with financing of the Business Sector and Sources of R&D funding from abroad were classified separately. The general hospitals that were included in this sector, are classified as part of the Business sector.

² OECD (2015). Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, the Measurement of Scientific, Technological and Innovation Activities. OECD Publishing.

DOI: <http://dx.doi.org/10.1787/9789264239012-en>

OECD (1989). R&D Statistics and Output Measurement in the Higher Education Sector: "Frascati Manual" Supplement. The Measurement of Scientific and Technological Activities Series.

(e) Abroad – comprises all non-resident institutional units that enter into transactions with resident units, or have other economic links with resident units (such as claims by residents on non-residents). Abroad also includes certain institutional units that may be physically located within the geographic boundary of a country, for example: embassies, consulates or military bases, as well as international organizations.

Expenditure of Government ministries on R&D, classified by objective, in line with the recommendations of the Frascati manual:

- (a) Exploration and exploitation of the earth – R&D related to the exploration of the Earth's crust and mantle, seas, oceans and atmosphere.
- (b) Environment – R&D aimed at improving the control of pollution, including the identification and analysis of the sources of pollution and their causes and all pollutant, their dispersal in the environment and the effects on human, species and the biosphere.
- (c) Exploration and exploitation of space – All civil space R&D relating to the scientific exploration of space, space laboratories, space travel and launch systems.
- (d) Transport and communications and other infrastructures – all R&D relating to the general planning of land use, infrastructure and land development and R&D related to transport systems, telecommunication systems, the construction and planning of buildings and water supply.
- (e) Energy – R&D aimed at improving the production, storage, transportation, distribution and rational use of all forms of energy.
- (f) Industrial production and technology – R&D aimed at improvement of industrial production and technology, including R&D on industrial products and their manufacturing processes, except where they form an integral part of the pursuit of other objectives (e.g. defense, space, energy, agriculture).
- (g) Health – R&D aimed at protecting, promoting and restoring human health, including all aspects of nutrition and food hygiene, medical and surgical treatment.
- (h) Agriculture – R&D aimed at the promotion of agriculture, forestry, fisheries and foodstuff production. Furthering knowledge on the impact of agriculture and forestry activities on the environment.
- (i) Education – R&D aimed at supporting general or special education, including training, pedagogy and didactics.
- (j) Culture, recreation, religion and mass media – R&D aimed at improving the understanding of social phenomena related to cultural activities, religion and leisure activities and define their impact on life in society.
- (k) Political and social systems, structures and processes – R&D aimed at improving the understanding of and supporting the political structure of society; public administration issues and economic policy; regional studies and multi-level governance; social change, social processes and social conflicts.
- (l) Advancement of general research
 - (1) R&D financed from general university funds – all R&D financed from general purpose grant from the Ministry of Education, through GUF.
 - (2) R&D financed from sources other than GUF – budgets allocations that are earmarked for R&D but cannot be attributed to an objective and are financed by sources other than GUF.