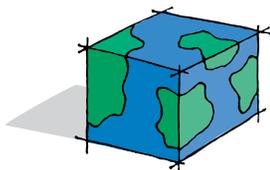




INVESTMENT DEVELOPMENT
AUTHORITY OF **LEBANON**

Presidency of the Council of Ministers

INVESTMENT OPPORTUNITIES IN THE TECHNOLOGY SECTOR 2016



IDAL

INVEST IN **LEBANON**

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HEADLINES

I. SECTOR OVERVIEW

2. COMPETITIVE ADVANTAGES

3. INVESTMENT OPPORTUNITIES

THE MENA REGION IS RIDING THE TECHNOLOGY WAVE

- ▶ Various national governments have committed to diversify their economies and invest in industries with high technology focus.
- ▶ Lebanon has also started to benefit from the restructuring of the global value chain and has witnessed **a surge of high tech companies** specialized in the manufacturing of electrical equipment, clean technologies and in the design of hardware components and semi-conductors.

NEXT AUTOMATED
ROBOTS (NAR)



KRIMSTON TWO

KRIMSTON TWO



SENSIO AIR



RIEGO



MULTILANE

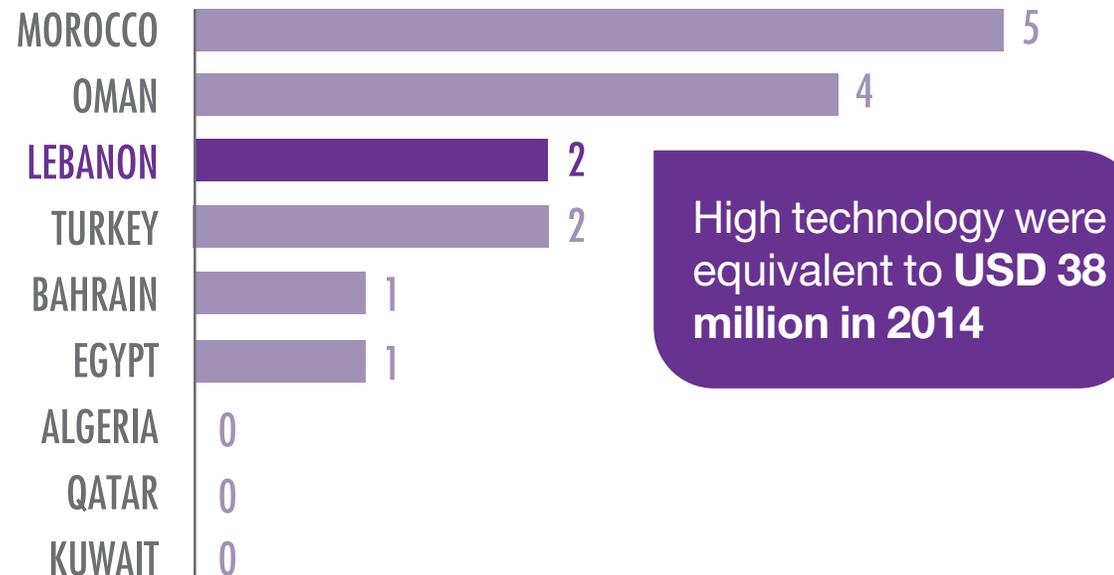


NATIONAL
INTRUMENTS



LEBANON POSSESSES ONE OF THE HIGHEST SHARES OF HIGH TECHNOLOGY EXPORTS IN THE REGION, ACCOUNTING FOR 2% OF TOTAL MANUFACTURED EXPORTS IN 2014

SHARE OF HIGH-TECH EXPORTS AS A % OF TOTAL MANUFACTURED EXPORTS, 2011-2014 | %



Note: High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

Source: World Bank Data, 2016

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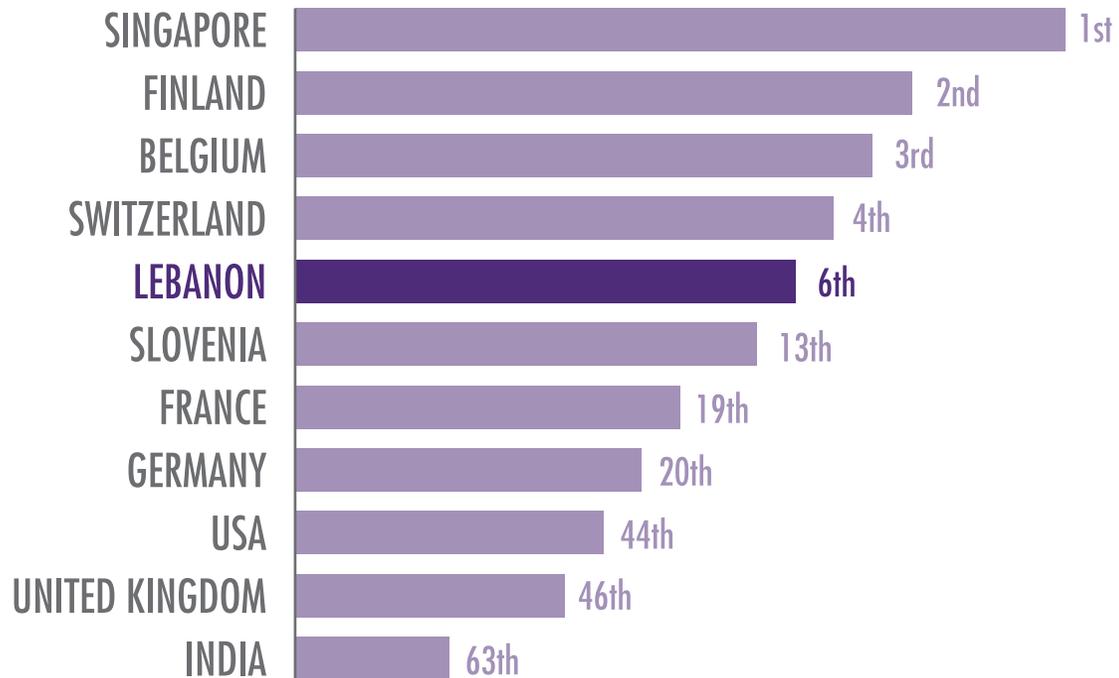
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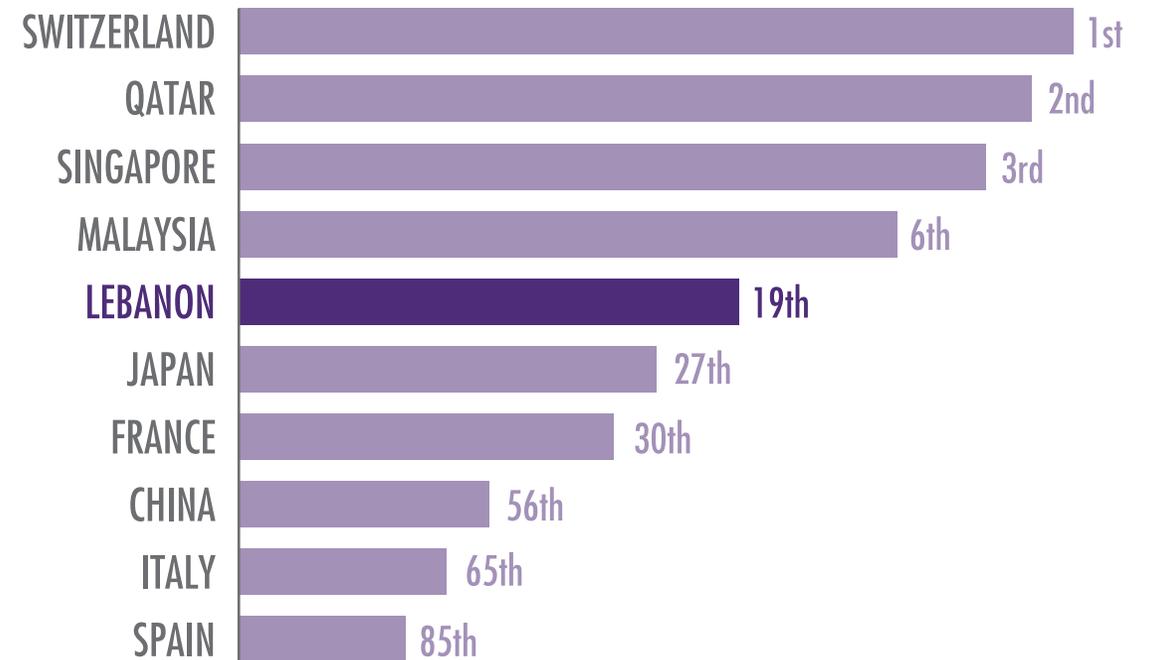
WORLD CLASS EDUCATIONAL SYSTEM

QUALITY OF MATH & SCIENCE EDUCATION INDEX (2015-2016)



Source: World Competitiveness Report 2015-2016

OVERALL QUALITY OF EDUCATION (2015-2016)



Source: World Competitiveness Report 2015-2016

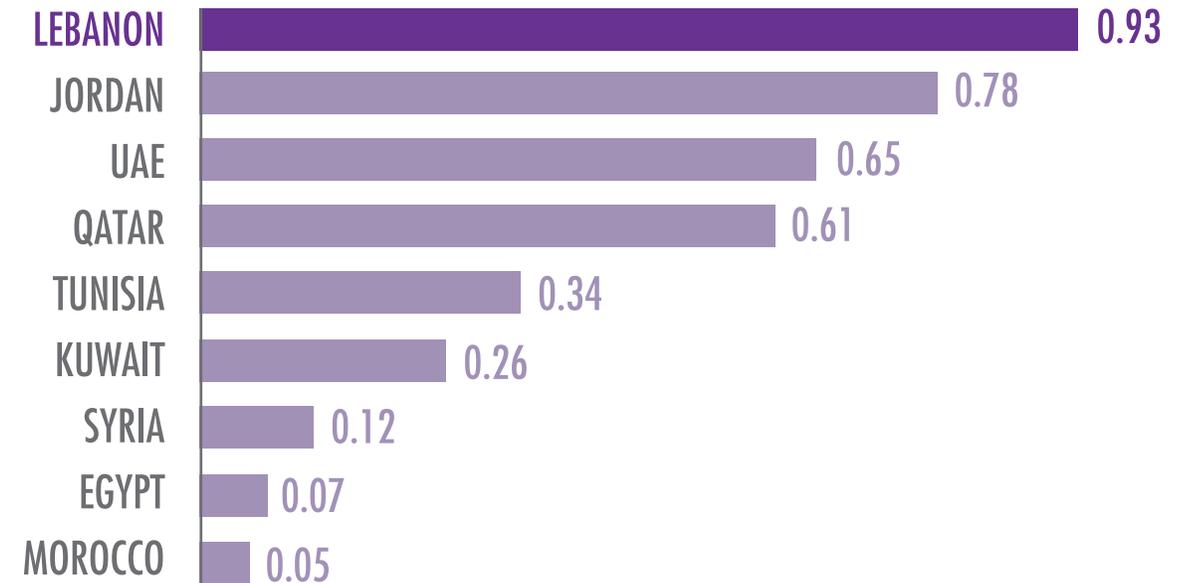
EXCELLENT SCIENTIFIC COMMUNITY AND UNIVERSITIES

▶ Lebanon is home to **47 universities**, and has the highest concentration of universities in the region.

▶ A growing number of **research and training centers** are being established mainly in the fields of environmental technologies, medical science and agriculture.

▶ **American University of Beirut** ranks **2nd** regionally

NUMBER OF UNIVERSITIES PER 100,000 POPULATION IN SELECTED REGIONAL COUNTRIES

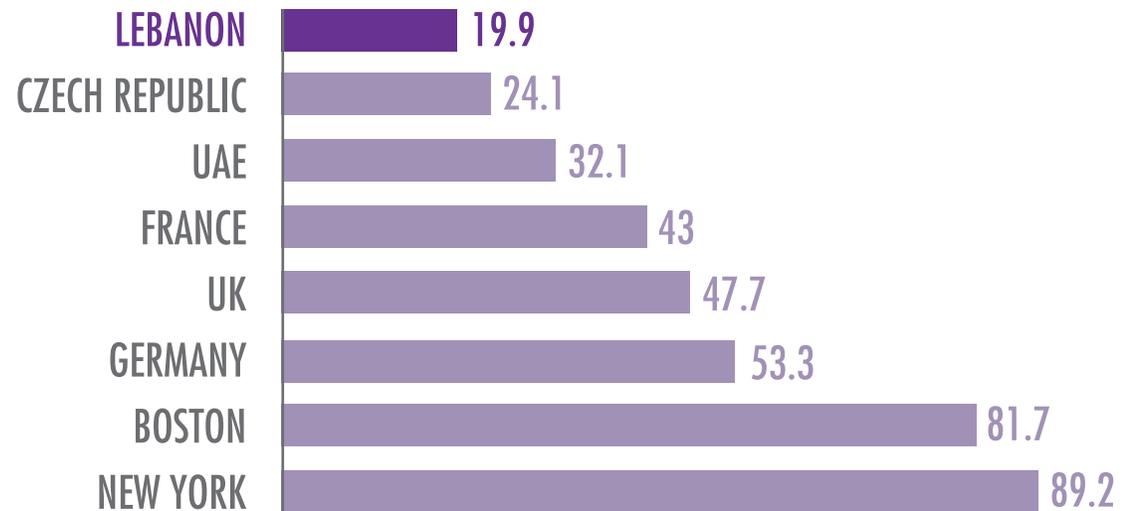


Source: IDAL's research

COMPETITIVE WORKFORCE

► The labor base is cheaper than the US, Europe and GCC countries, with the average wage of a software engineer nearly **37% lower than in the GCC and 50% lower than in selected developed economies.**

MEDIAN ANNUAL WAGES OF SOFTWARE ENGINEERS IN SELECTED COUNTRIES USD THOUSANDS | 2016



Source: Payscale, 2016

ECOSYSTEM: FINANCIAL SUPPORT

▶ **Fiscal Incentives:** IDAL offers **tax breaks** for up to 10 years, as well as other incentives to local and foreign companies operating in the sector.

▶ **Incubation and Acceleration:** **8** incubators provide training, technical & financial assistance to new and existing businesses across Lebanon.

▶ Around **6 venture capital** firms have operations in Lebanon in addition to various regional VCs which have backed a number of local pioneering companies.

▶ **Circular 331**, issued by the Central Bank in 2013, provides an amount of up to 400 Million USD for Lebanese banks' equity investment into startups, incubators, accelerators, and funds operating in Lebanon. These investments will be 75% guaranteed by the Central Bank.

▶ Kafalat provides **financial guarantees** for loans of up to USD 400,000 granted by commercial banks to SMEs.

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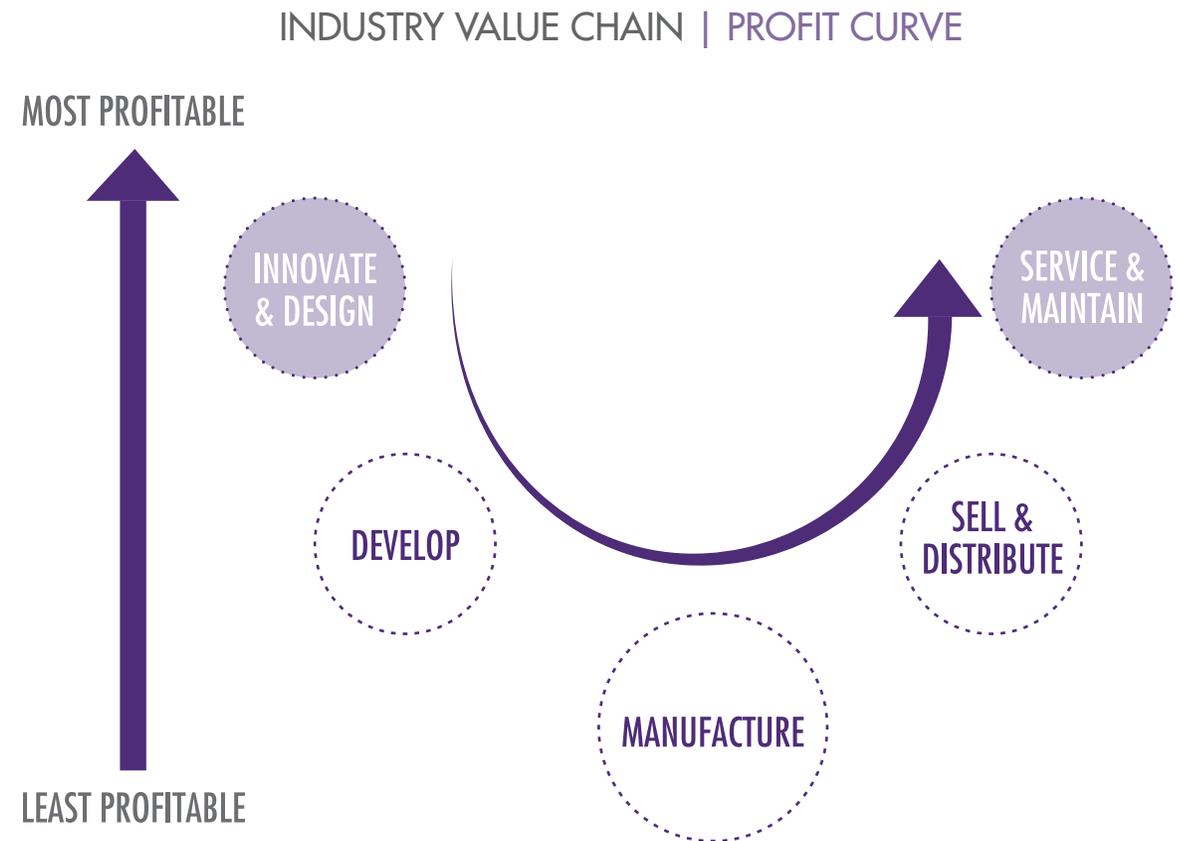
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OPPORTUNITIES EXIST IN BOTH ENDS OF THE VALUE CHAIN WHICH ARE THE MOST TWO PROFITABLE SEGMENTS: DESIGN AND SERVICES

▶ Lebanon can act as a product development base, or as an outsourcing base mainly for the **design & manufacturing** of critical components as well as in **services & maintenance**.

- ▶ **3 promising sectors** have the potential to mature:
- ▶ **The manufacturing of ICT components**, including electronics, semiconductors
 - ▶ **The manufacturing of medical technologies**
 - ▶ **Research and Development**



ICT MANUFACTURING: OPPORTUNITIES ARE NOW EMERGING IN THE MANUFACTURING AND DESIGN OF HARDWARE COMPONENTS

- ▶ In 2015, global spending on ICT was estimated at USD 3.51 trillion, of which 18.5% was spent on hardware.
- ▶ In 2016, hardware sales was estimated at **USD 262.2 million** (accounting for **60.2% of total market size**) and are expected to grow at a **CAGR of 8.3%** over the 2016-2019 period.

- ▶ The local hardware industry is at its early stages and is concentrated in specific activities & products.
- ▶ At present, activities in the hardware industry include systems concepts and infrastructure software, semiconductor design, design and production of circuit boards, fiber optic cables, electronic components and power supply systems.

ICT MANUFACTURING: INVESTMENT OPPORTUNITIES

▶ OPPORTUNITIES ARE MAINLY CONCENTRATED IN THREE AREAS:

1. Design and manufacture of specialized, high end electrical components
2. Design and software engineering of hardware equipment and components
3. Manufacturing of telecom infrastructure products

▶ **Multilane** is a global developer of tech equipment for global internet networks that has attracted **clients that include Google, Cisco, Dell.**

multiLane^{sal}

▶ **S. & A.S** specializes in the production of electronic controllers. **It has a customer base extending to Arab countries, Africa, Europe, India and Hong Kong.**



MEDICAL TECHNOLOGIES: THE INDUSTRY HAS WITNESSED EXPLOSIVE GROWTH IN RECENT YEARS FUELED BY RAPID TECHNOLOGY AND SCIENCE ADVANCEMENTS

▶ In 2014, the global market was valued at **USD 380 billion**, and is projected to reach **USD 398 billion** in 2017.

▶ In 2014, the local medical devices market was estimated at **USD 240.3 million** and is forecasted to grow at a **CAGR of 7.1%** for the next 4 years, to reach a value of **USD 339.4 million** by 2019.

▶ Despite being an important consumer of medical equipment and a major destination for medical tourism, innovators do not only rely on the domestic sector activities, but also **export their innovations to both regional and global markets.**

MEDICAL TECHNOLOGIES: LEBANON'S COMPETITIVE STRENGTHS

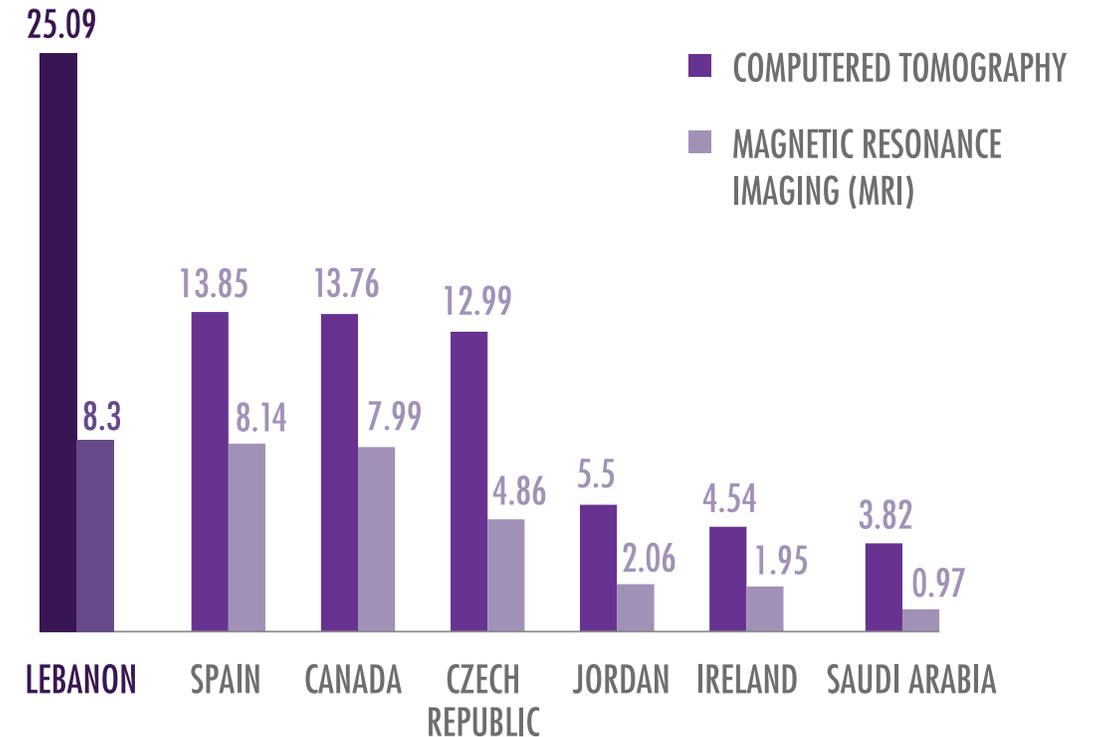
▶ Health expenditure accounted for **6.4% of Lebanon's GDP in 2014**, compared to a MENA average of 5.3%.

▶ A **high ratio of advanced medical equipment per capita**, well above most higher-income countries.

▶ The **highest ratio of doctors to population** (32 per 10,000 people) in the region and one of the highest in the world.

▶ **Strong synergies between hospitals and universities**, facilitating technology and skills transfer.

TOTAL DENSITY OF MEDICAL EQUIPMENT PER 1,000,000 POPULATION | 2013*



Source: IDAL's research

MEDICAL TECHNOLOGIES: INVESTMENT OPPORTUNITIES

▶ Lebanon offers **great potential in product development**, supported by a set of competitive advantages in the complementary industries of the medical technology sector such as software engineering and development.

▶ **CardioDiagnostics** specializes in cardiac care solutions. It won first prize at the Global Innovation through Science and Technology (GIST) competition, and was recognized by the White House as one of the top 5 global startups that have created innovative solutions to global challenge.



RESEARCH AND DEVELOPMENT: LEBANON HAS THE FUNDAMENTALS TO MOVE ALONG THE PATH OF INNOVATION

▶ In 2006, **750 researchers** were active in R&D activities with an estimated budget of **USD 55 million**, equivalent to 0.22% of the country's GDP. This is comparable to the regional average (0.2%) but well below the average in Europe (1.85% in 2007).

▶ The large number of scientific publications indicate that Lebanon enjoys a substantial scientific infrastructure and has the capacity to innovate and develop new products. Scientific and technical journal articles have increased at a **rate of 143%** from 2003 to 2013.

▶ Lebanon enjoys a flourishing scientific and technological community embedded in **47 universities** and higher education institutions, of which **12 include science and/or technology faculties, and 6 research centers.**

RESEARCH AND DEVELOPMENT: INVESTMENT OPPORTUNITIES

► The Science Technology and Innovation Plan developed by representatives of universities and national organizations identified a number of opportunities in 3 specific areas:

- 1. Industry and engineering**
- 2. Environment and agriculture**
- 3. Medicine and health care**

► In a regional context and given Lebanon's competitive edges in the field of medical sciences, health care and medical innovations will constitute a main pillar of the Lebanese science and technology base.

► **Environmental technologies** are also increasing in popularity among research centers with the promising future of renewable energy innovations.

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