



STATE OF ISRAEL
ministry of Industry, Trade and Labor

The Intellectual Capital of The State of **Israel**



60 Years of Achievements

60

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The Intellectual Capital of The State of Israel



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Jerusalem, November 2007

60 Years of Achievements



Produced by the Office
of the Chief Scientist
Jerusalem, November 2007
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Introduction



A fundamental principle of the vision of the State of Israel is the understanding that in the absence of natural resources, reliance on human capital and knowledge has been the most fitting and natural choice. Education, R&D, and technological innovation have been the key success factors to the nation's economic and social development, as well as the basis for its national strength.

The extensive, and seemingly inexhaustible, supply of human resources in Israel has made such a strategic emphasis possible. Israel's human capital is characterized by a unique combination of broad interdisciplinary knowledge, entrepreneurial spirit, creativity, and original thinking. These qualities have led to a constant flow of new ideas, innovative developments, and breakthrough technologies.

The Office of the Chief Scientist, within the Ministry of Industry, Trade, and Labor, is mandated to execute government policies regarding the encouragement of industrial R&D in Israel. Within this framework, the Office of the Chief Scientist operates a broad range of programs that encourage technological entrepreneurship, enhance Israel's scientific resources, broaden the knowledge base of the industry, and promote R&D cooperation at both the national and international levels.

The synergy between prudent government policy scientific excellence and business approach has borne fruit for Israel's industrial sector, as well as for its academic institutions. This is manifested in the many outstanding achievements made by Israeli companies and individuals on an international scale.

Israel's Intellectual Capital Report presents Israel's core competencies, key success factors, and hidden assets, all of which provide the country with comparative advantages and high growth potential.

The Intellectual Capital Report highlights Israel's competitive edge in the international market. The profile of Israel that emerges from this comparative study is clearly one of a nation that is a superior partner for global business and worldwide collaboration. The report also presents Israel as a nation that offers great potential for international investments.

This paper surveys the competitive advantages of the State of Israel, which include technological excellence, human capital and modern infrastructure, along with other characteristics that have placed Israel at the forefront of science, innovation, and technology.

I am pleased to present Israel's unique characteristics and the country's growth potential as outlined in the following study, as well as in the various R&D support programs offered by the Office of the Chief Scientist. As the State of Israel enters its 60th year, such promising statistics on Israel's status in relation to the rest of the world encourage us to continue to seek out new challenges and areas for future growth.

Dr Eli Opper
The Chief Scientist of the Ministry
of Industry, Trade and Labor

Acknowledgements

The Intellectual Capital (IC) of Israel Report aims to introduce both the tangible and the intangible assets of the State of Israel for future growth. This report is based on information and data collected from international statistical publications and through key figures in Israel hailing from a broad range of disciplines.

We wish to thank all those who have shared their valuable time with us and helped us in the process of collecting the information for this edition:

- Ministry of Industry, Trade, and Labor
- Ministry of Finance
- Manufactures' Association of Israel
- The Israel Export & International Corporation Institute
- Standard Institution of Israel
- Bank of Israel
- The Israel Academy of Science and Humanities
- The Neaman Institute, the Technion
- Israel IVC

As **Israel celebrates 60 years** of independence, this 3rd version of the Intellectual Capital Report of Israel takes on an ever increasing importance in measuring the collective achievements of the country. The first edition was a private version handled by Edna Pasher Ph.D. & Associates in 1998. The second edition (2004) was commissioned and supported by the Chief Scientist of the Ministry of Industry, Trade and Labor. This current edition was also initiated and supported by the Chief Scientist, Dr. Eli Opper, who has turned it into a national measurement tool to promote Israel as a key player in the global market.

Since its first edition in 1998, the Intellectual Capital Report of Israel has become a source of inspiration for similar exercises all over the world – presented, discussed, and referenced in many academic conferences and papers including the recent global event on Knowledge Based Development in FORUM 2007 - The Universal Forum of Cultures and Knowledge Monterrey 2007 in association with UNESCO (following the first one in Barcelona in 2004).

The report was written by **Dr. Edna Pasher and Ms. Sigal Shachar**, Edna Pasher Ph.D & Associates with the governmental guidance of Mr. Aviram Zolti, OCS.



How to read this report

This paper focuses on the study of the hidden values of the state of Israel, and introduces its impressive achievements in various fields. In recent years, Israel has become a hothouse for some of the most profitable technological developments in which the basis for competitive advantage and future growth potential lies.

The booklet has been produced by the Chief Scientist of the Ministry of Industry, Trade, and Labor in order to present Israel's potential to investors, business people, and partners from all over the world by providing a comprehensive picture of the key success factors of Israel, such as economic growth, research and development in scientific fields and hi-tech. In addition, the report provides an updated list of government support programs and profiles a sampling of successful Israeli companies.

The booklet includes three parts:

Part 1: The Intellectual Capital of Israel Report

This report is the 3rd edition of the Intellectual Capital Report. The 2nd edition was published in 2004 by the Chief Scientist of the Ministry of Industry, Trade and Labor, and the first in 1998 by Edna Pasher Ph.D and Associates.

The report is based on the theoretical model called the "Skandia Navigator" developed by Prof. Leif Edvinsson. The model has 5 focal areas, which all together consider the tangible and intangible assets of Israel, namely: Financial Capital market Capital, Human Capital, Process Capital, and Renewal and Development Capital. These assets are integrated to visualize Israel's competitive edge in the global economy.

The Intellectual Capital Balance Sheet is based on data and information collected from international publications, such as OECD, the Human Development Report, IMD, the Global Competitiveness Report, among others, as well as from national sources and key figures from governmental offices and academia.

The main findings and The Leading Indicators

The study shows that, despite its small size and relatively young age, Israel has many exceptionally outstanding competencies at its core:

- **Excellent human resources:** a highly educated workforce and unique cultural characteristics such as curiosity, creativity, a positive outlook, innovative thinking - all of which are important to the success of high-tech research and development.
- **Modern infrastructure:** a supportive business environment, a highly advanced banking financial sector, legal protection of foreign trademarks and patents.
- **Cutting edge technology and scientific breakthroughs:** Israel is one of the largest centers in the world for high-tech startup enterprises.

The Leading Indicators

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3.6	Central Bureau of Statistics, 2006	National Expenditure on Education as a percentage of GDP, 2003	1
4.1	The Global Competitiveness Report 2006-7	Availability of Scientists and Engineers	1
5.9	IMD, 2004	Total Expenditures on R&D (percentage of GDP), 2004	1
5.11	The Global Competitiveness Report 2006-7	Venture Capital Availability	2

Part 2:

This part includes a comprehensive listing of government support programs currently operating in Israel in order to build financial support and a cooperative infrastructure for foreign investors and business people.

Part 3:

This part includes a few examples of successful Israeli companies in various fields with special contribution to human needs. We choose to present some innovative Israeli high-tech companies that have significant contribution to the world wealth.

The companies are:

1. **InSightech Ltd.** has developed a medical device for MR imaging. This product is a Magnetic Resonance Imaging (MRI) with focused ultrasound energy –a new treatment modality that can replace invasive procedures and provide therapeutic alternatives to millions of patients with serious diseases around the globe.
2. **Given Imaging** developed the PillCam™ video capsule which is a disposable, miniature video camera contained in a capsule that can be easily ingested by the patient.
3. **Alvarion** is the world's leading provider of innovative wireless broadband network solutions enabling Personal Broadband to improve lifestyles and productivity with portable and mobile data, VoIP, video, and other services.
4. **IDE Technologies Ltd.** is a pioneer and leader in development environmentally friendly and economical plants for saline water desalination, industrial streams purification, and effluent concentration.



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Part 1

The Intellectual Capital of The State of Israel The Hidden Values of Israel



Jerusalem, November 2007



Research Methodology

Intellectual capital is comprised of the knowledge, wisdom, capability, and expertise that provide an organization/country with a competitive advantage over other organizations/countries and determine its potential for future growth.

The Intellectual Capital is a theoretical model called "**Skandia Model**" developed by **Prof. Leif Edvinsson**, the former vice president for Intellectual Capital at Skandia, a Swedish global financial services company. The model measures the tangible and the intangible assets of the organization/country/region.

We have chosen the Intellectual Capital Report as a tool to navigate and guide Israel's realization of its goals. **The Intellectual Capital Report** provides the reader with an integrated and balanced picture of the country's potential for future growth as we see it today.

In 1998, Israel was the second country in the world, after Sweden, to produce a national Intellectual Capital Balance Sheet. Since then, many countries have measured their core competencies and competitiveness in the global economy using this tool.

Skandia Model

The Skandia model provides a balanced and holistic picture of both financial capital and intellectual capital.

This model, which is used to measure intellectual capital, uses the metaphor of a house to represent the organization or nation. **Financial capital** constitutes the roof of the house and reflects the organization's history and past achievements. Financial capital does not necessarily enlighten us about future achievements. The supporting columns - **process capital** and **market capital** - constitute the areas upon which the present operations of the organizations/nations are based. **Renewal and development capital**, is situated in the foundation of the house, measures how the organization/nation prepares for its future. **Human capital** is in the house's center and interacts with all the different focal points. Human capital is the heart of the organization/nation and is composed of the capabilities, expertise, and wisdom of the people within the organization/nation. It is the role of the organization/nation to assist, guide, and support its people towards realizing their strategic goals.

The Focal Areas of the Model:

The value chain, according to Leif Edvinsson expresses the various components of market value in the following model:

Market Value = Financial Capital + Intellectual Capital

Human Capital

Human capital includes knowledge, wisdom, expertise, intuition, and the ability of individuals to realize national tasks and goals. This focal area also includes the values encompassed within the culture and philosophy of the organization/nation. It is important to note that human capital is the property of individuals, not the organization/nation.

Process Capital

Cooperation and the flow of knowledge require structural intellectual assets, such as information systems, hardware, software, databases, laboratories, an organizational/national infrastructure, and a management focus. Such structural intellectual assets sustain and increase the output of human capital.

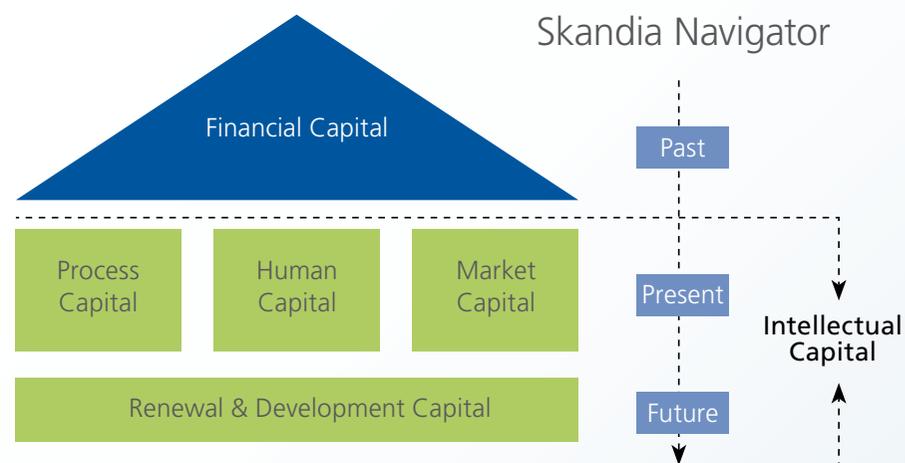
Market Capital

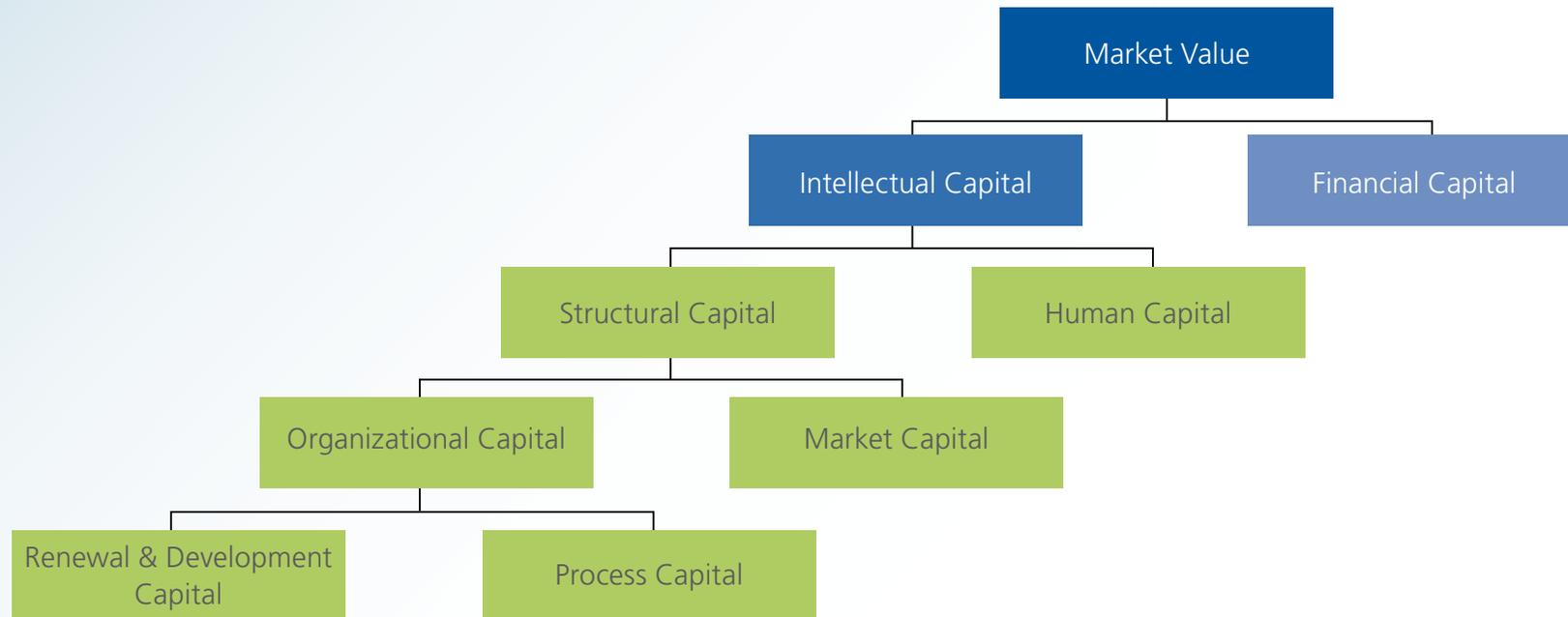
Market capital refers to the general assets embodied in the organization/nation's relationship with the international market. The assets in this focal point include customer/nation loyalty, as well as the satisfaction expressed by strategic customers, brands, etc.

Renewal and Development Capital

Renewal and development capital refers to the organization/nation's capabilities and real investments made in an effort to increase its competitive strength in future markets, which, in turn, encourages future growth. Renewal and development assets include investments in research and development, patents, trademarks, start-up companies, etc.

Skandia Navigator





Israel's Intellectual Capital Report presents Israel's core competencies, key success factors, and hidden assets: all of which provide the country with comparative advantage and high growth potential.

The Intellectual Capital Balance Sheet is based on data and information collected from international statistics publications, such as OECD, the Human Development Report, IMD, the Global Competitiveness Report, etc., as well as from national reports and key figures in the government and academia worlds.

The Intellectual Capital Report highlights Israel's competitive edge in the international market. The profile of Israel that emerges from this comparative study is clearly one of a nation that is a superior partner for global business and worldwide collaboration. The report also presents Israel as a nation that offers great potential for international investments.

In the following document, we attempt to provide an integrative picture that covers each of Israel's diverse fields of activity along with an in-depth examination of the intellectual assets associated with each of these areas.

The State of Israel - General Description

The State of Israel is located in west Asia, on the southeastern edge of the Mediterranean Sea. It shares a border with Lebanon in the north, Syria and Jordan in the east, and Egypt in the southwest. Israel has a diverse population of 7,150,000 citizens, according to 2007 estimates, and sits on an area of 20,770 square kilometers. Unlike most other countries in the Middle East, *Israel is a developed, modern, democratic, and pluralistic country that is attractive to investors and business partners from all over the world.*

Despite its small size and relatively young age (**60** years of independence), Israel has succeeded in accomplishing great technological achievements. It is at the forefront of a broad range of disciplines such as agro technology, biotechnology, computer-aided education, and data communication. Israel has an open economy which is fully integrated in the global trading system.

Israel has world-class educational institutions. Research is performed at each of Israel's seven universities, five technical colleges, and ten specialized research institutes. Furthermore, there is strong collaboration between universities and the industrial sector, which creates innovative, dynamic, and new ideas for future development.

The Vision of Innovation in the State of Israel

In the 21st century, Israel is faced with the exceedingly demanding challenge of development, growth, and renewal in an increasingly dynamic and competitive world. Israel is a leading innovative nation in numerous fields. **Placing its strategic emphasis on human capital and knowledge has been a fitting and natural choice for Israel given the absence of natural resources within the country, and the 2000 years of intellectual legacy of the Jewish people in exile, with little access to tangible sources for value creation such as land.**

The Israeli government has a very clear strategic policy to encourage innovation. The Law for Encouragement of Industrial Research and Development (1984) acts as the general mandate to the Office of the Chief Scientist (OCS), which is located within the Ministry of Industry, Trade, and Labor. Another important policy of this office is to support and to enhance international trade cooperation between nations and between Israeli companies and foreign companies.

Israel is blessed with creative and innovative minds, and thus, is capable of transforming new ideas into products of high added value within a short period of time with a modest budget. This process has the potential to shrink the balance of payments deficit, thereby accelerating progress towards economic independence. As such, Israel has chosen to invest more in innovation and human resources than in infrastructure.

The Intellectual Capital Report demonstrates these hidden values of the country and its competitive advantage, making the report a vital marketing tool. We are happy that Israel's Intellectual Capital Report has become an effective tool in depicting Israel in its truest form.



1. Financial Capital

Figure 1.1 > G.D.P Growth Comparison, 2005

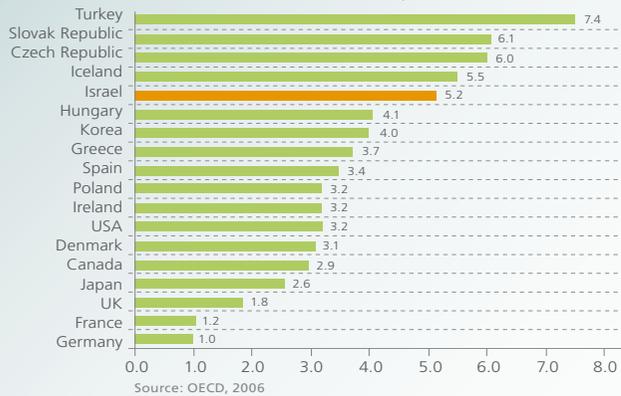
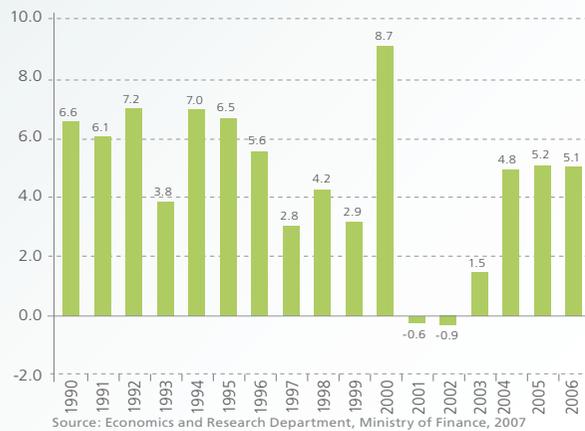


Figure 1.2 > G.D.P Growth at Annual Rate



Financial capital reflects the tangible economic achievements of the country such as: GDP, structure of industry, workforce, rate of services and products per year, etc.

Various figures in the Israeli economy forecast Israel's economic growth rates. These forecasts are mainly based on past performance and statistical data that express the rate of change in tangible assets.

In this chapter, we will present a number of economic indicators that reflect the yields in the country's growth rate during its 60 years of independence.

Gross Domestic Product (GDP)

According to the analysis of the Bank of Israel, since 2003, economic activity has been showing signs of recovery due to the expansion of global trade, hi-tech activity and less economic uncertainty.

This recovery is reflected in substantial increases in exports and in private consumption. In 2006, GDP growth registered at 5.1%.

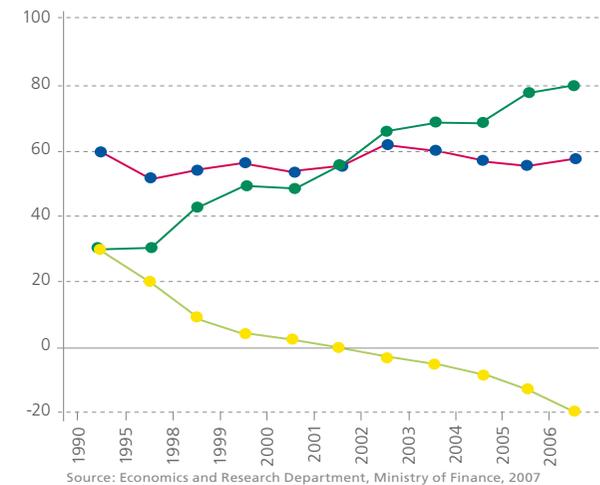
This growth can be attributed to the positive trends in the world economy and the reduction of uncertainty in the fiscal policy of the Israeli government.

External Debt

At the end of March 2004, the net external debt (total external liabilities minus external assets) was -6.2 % of the GDP. In September 2006, the net external debt stood at -22.0% of the GDP.

This figure shows that Israel's external assets are greater than its external liabilities. In previous years, liabilities were greater than assets. This gives further indication that the likelihood of a balance-of-payments crisis is small.

Figure 1.3 > External Debt, Gross and Net (percentage of G.D.P., end-period)



The Labor Market

ICT Employment

In 2000, the developed and advanced high-tech industry and the healthy labor market in Israel created many jobs, particularly in the Information and Communication Technologies (ICT) sector. According to OECD statistics, the rate of ICT workers employed in the Israel's business sector in 2000 was 8.2%. In 2003, this rate decreased but still remains high with 7.6% ICT workers, placing Israel 4th in relation to other developed countries.

The Israeli workforce

Following the economic crisis of the high-tech industry in 2000 that occurred throughout the Western world as well as in Israel, there was a labor market shock that left many people unemployed. The unemployment rate increased from 10.9% in 2000 to 10.3% in 2003. However, throughout 2003 and early 2004, the labor market took a positive turn as Israelis rejoined the work force and jobs were created. In 2006, the unemployment rate decreased to 7.7%.

The number of Israeli employees in the work force increased significantly between the first quarter of 2003 and the third quarter of 2006, increasing by 262,000 employees. In 2006, the number of Israeli employees in the work force stood at 2,608,000. This positive trend in the labor market reflects the government's successful application of its policy of lowering transfer payments to the unemployed and creating new places of work.

Figure 1.4 > ICT Employment
(as a percentage of Total Business Sector, 2003)

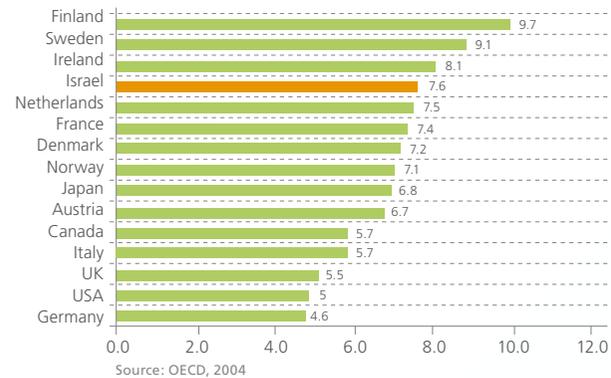
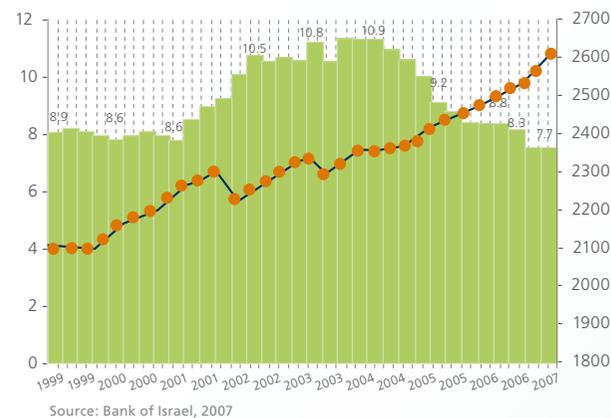


Figure 1.5 > Quarterly employment & unemployment

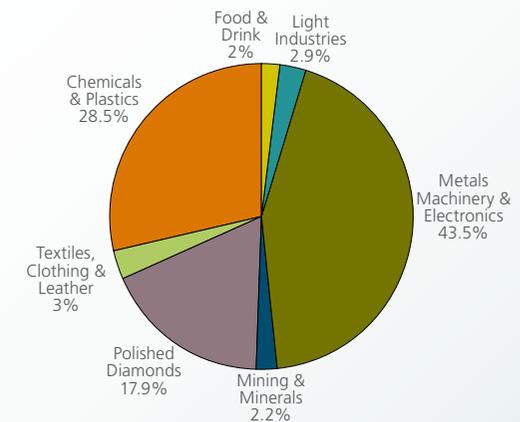


Industrial Production by Major Branches

Over the past few years, the emphasis on production shifted from the traditional sectors to more knowledge-based sectors. High technological development has increased the productivity of this sector.

As is shown by Ministry of Industry and Trade data, the metals, machinery, and electronics industries are the largest major branches of industrial production, together making up 43.5% of industrial production.

Figure 1.6 > Industrial Production by Major Branches, 2006



Source: Economic & Planning Administration, Ministry of Industry, Trade & Labor, 2006

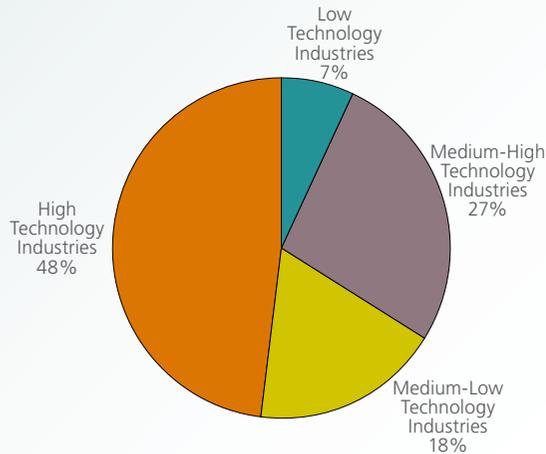


Israeli Exports by Industry

In the early years of its existence, Israel's exports consisted of agricultural products in overwhelming proportions compared to the size of the market at that time. Out of a total of \$50 million worth of export goods in 1950, agricultural products made up \$35 million. Over the years, the composition of Israel's exports has changed. Efforts have been directed towards the development and export of knowledge-based products, mainly electronic products, computer software, pharmaceuticals, and others.

According to Israel's Export Institute, the leading

Figure 1.7 > Manufacturing Exports by Technological Intensity - 2006



Source: The Israeli Export & International Cooperation Institute, 2007

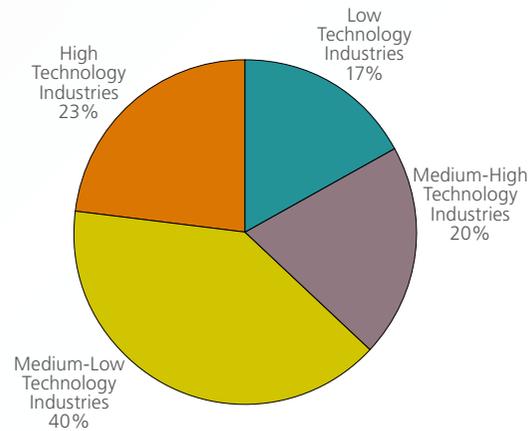
manufacturing exports by technological intensity in 2006 were high-tech industries (48%) – an approximately 2-fold increase since 1991 (23%) – and Israeli software sales, which have increased by over 700% over the last 10 years, as it can be shown in the following figures.

Inflation

Inflation since 1999 has been close to zero. In 2005, the Consumer Price Index climbed by 2.4%. In 2006, it declined by 0.1%.

This decline was largely a result of the weakness of the dollar, the decline in oil prices (in the second half of 2006), as well the Israeli government's tight control policy in a

Figure 1.8 > Manufacturing Exports by Technological Intensity, 1991

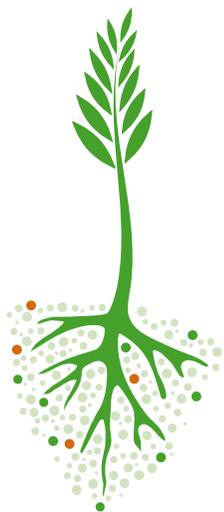


Source: The Israeli Export & International Cooperation Institute, 2003

Figure 1.9 > Annual Inflation 1986-2006 (end of period)



Source: Economics and Research Department, Ministry of Finance 2007



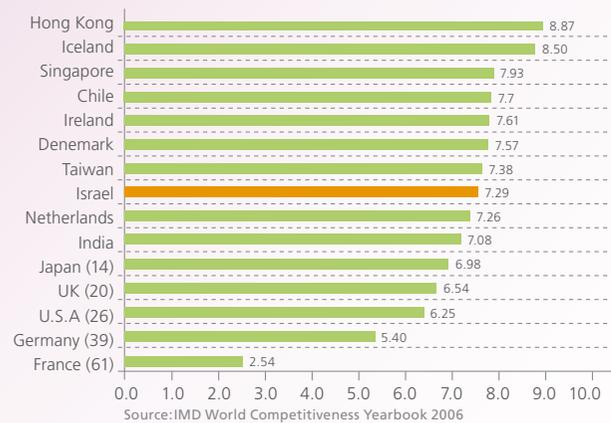
A brief review of Israel's economic history and a look at its 2006 economic profile does not give us an indication of the country's true growth potential. In accordance with our mission, we will now try to define the country's core competencies and key success factors, since these intellectual assets provide the country with a long-term advantage.





2. Market Capital

Figure 2.1> Attitude Toward Globalization



Market capital reflects the intellectual capital embedded in Israel's relations with other countries. The intellectual assets in this area are derived from Israel's capabilities and successes in providing an attractive, competitive solution to the needs of its international clients, as compared with other countries.

Indicators such as openness to globalization and the flexibility and adaptability of Israeli companies to the dynamic global market reflect the resilience of the Israeli economy and its core capabilities in market capital. All of these produce a basis for assessing the country's attractiveness in the eyes of international businessmen and foreign investors.

Israel has a positive attitude towards globalization as is shown in the IMD data from 2006. Israel was ranked 8th out of 61 countries participating in the survey.

Competitive Advantage – Israel from a Global Perspective

The World Economic Forum (WEF) developed a new indicator – Global Competitiveness Indicator – that examines the level of competitiveness of the countries in the world. In 2006, 125 countries were examined in the survey. This indicator divides the countries into three groups according to their stage of development. The transition from stage to stage depends on the changes in the GDP of each country.

The GCI indicator takes into account many indicators in economic, political and environmental areas, all of which fall under nine categories. These categories are divided into three groups:

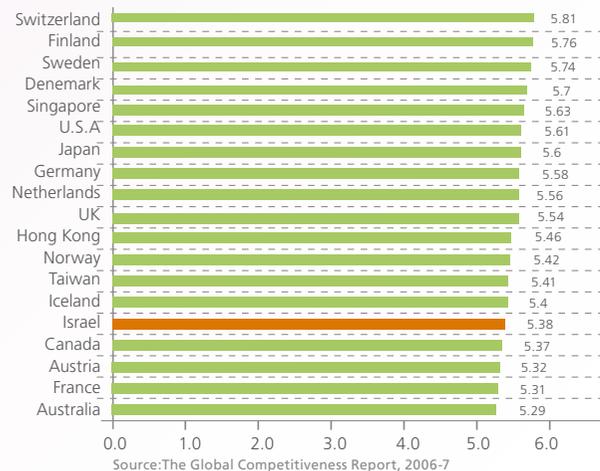
First group: institutions, infrastructure, macro economy, health, and education.

Second group: higher education, market efficiency, and technology readiness.

Third group: high-tech and innovation.

According to the Global Competitiveness Report, **Israel was ranked 15th out of 125 countries in terms of its GCI.** According to this survey, Israel is one of the most competitive countries. One of the reasons for Israel's high ranking is the fact that the improvement in the global economy has manifested itself in increased demand for high-tech industry, which is a central component of Israel's industrial export.

Figure 2.2 > GCI Indicator

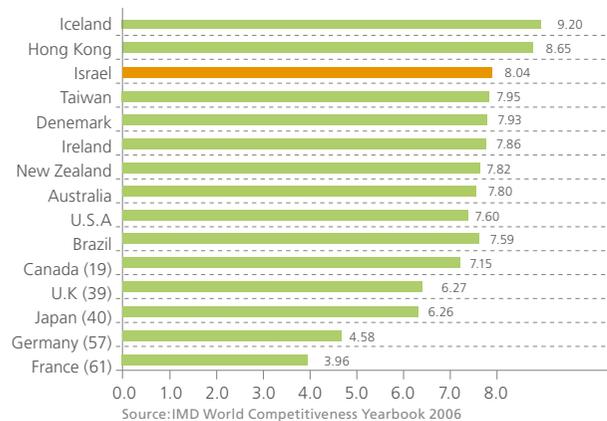


Openness to Globalization

The global market offers a great opportunity for companies and countries to tap into larger markets around the world. It means they can have access to more capital flows, technology, cheaper import and larger export markets.

Since the 1990's, Israel has exposed its domestic industry to foreign competition. Israel has concentrated on promoting exports, opening new markets, and expanding existing ones.

Israel's trade policy was enhanced by a wide range of trade agreements and commercial arrangements with countries and international institutions, which enable Israeli exports to compete on the international market without discrimination and under fair conditions.

Figure 2.3> Flexibility and adaptability


Membership in OECD

Israel was recently offered membership in the OECD, an organization founded to facilitate development and economic cooperation among the developed countries. This proposal came after impressive achievements within Israel's economy in recent years and will make Israel a full member in this exclusive club of 30 developed countries. In addition to the positive impact of OECD membership for Israel, it will also allow Israel to unify its statistical reports with those of the OECD, providing the country with a clear perspective of its place among the other developed countries.

Economic Resilience

The worldwide economy is very dynamic. Countries are faced with many challenges, such as new markets, new competitive companies, new needs, etc. One of the most significant indicators used to examine a country's strength and stability is its flexibility and the extent of its adaptability to new challenges.

According to the IMD survey, **in 2006 Israel was ranked 3rd in terms of the flexibility and adaptability** of actors within the economy when faced with new challenges.

Another important indicator that portrays the country's ability to respond quickly to changes and challenges is the resilience of its economy. Following the worldwide high-tech crisis in 2001, Israel was one of the first economies to recover quickly and to redirect its attention to growth and development. The 2006 IMD survey also shows that Israel has strong **economic resilience** to the economic cycle of busts and booms. **Israel was ranked 6th.**

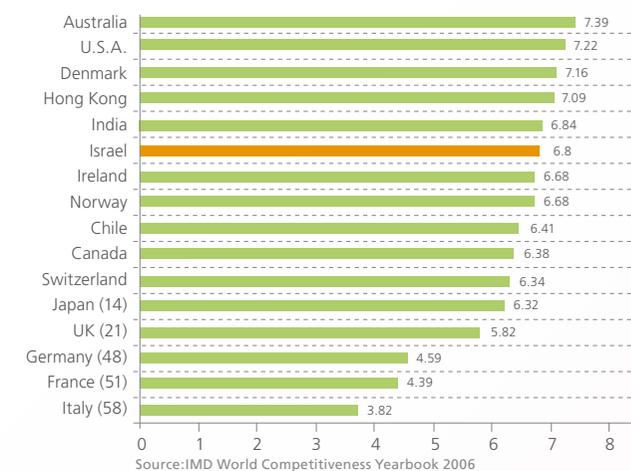
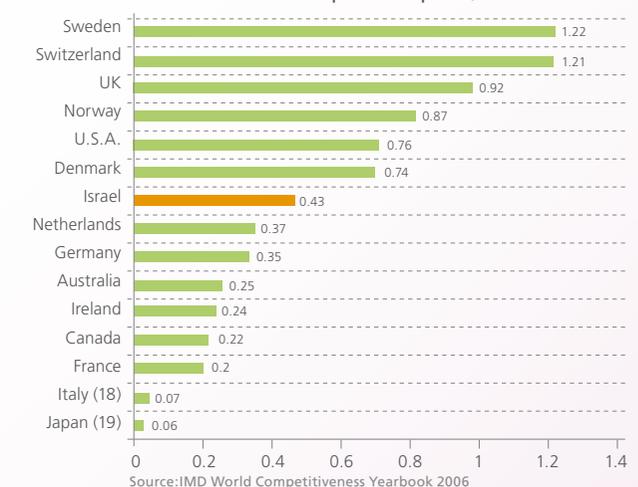
Nobel Prizes

Nobel Prizes are awarded by the Nobel Foundation of Sweden to men and women who have rendered the greatest service to humankind. Between 1901 and 2006, more than 750 Nobel Prizes have been awarded.

In recent years, Israeli scholars have won Nobel Prizes, in chemistry (2004) – **Prof. Aaron Ciechanover** and **Prof. Avraham Hershko**, both from the Technion – Israel Institute of Technology in Haifa – and in economics (2005) – **Prof. Israel (Robert) Ouman** from Einstein Institute for Mathematics and the Rationality Research Center in the Hebrew University in Jerusalem.

In a survey conducted by IMD in 2005, Israel was ranked 7th in Nobel Prizes per capita, measured per million people, awarded in physics, chemistry, physiology, medicine, and economics since 1950.

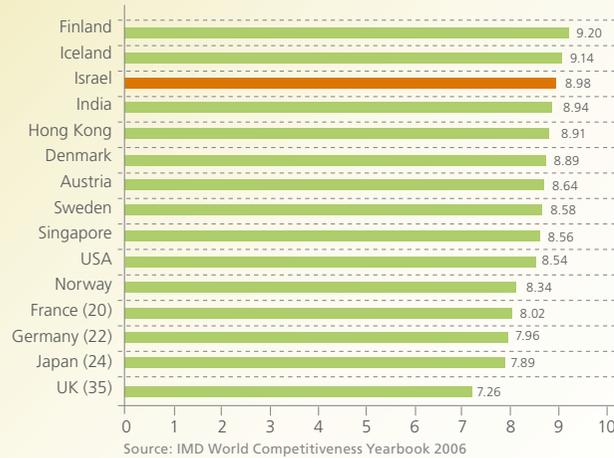
This is quite an impressive performance when considering the small size and young age of the country.

Figure 2.4> Resilience of the Economy

Figure 2.5> Nobel Prize per Capita, 2005




3.Process Capital

Figure 3.1> Information Technology Skills



This focal point reflects Israel's intellectual assets that support its present activities. These assets facilitate sharing, exchange, flow, growth and transformation of knowledge, from human capital to structural capital. These assets include information systems, laboratories, technology, management attention, and procedures.

Key process capital success factors for the creation of know-how in Israel have been taken from various fields such as communications, education, agriculture, management, entrepreneurship, risk-taking, employment, immigration, and absorption. These factors create the base of Israel's business infrastructure.

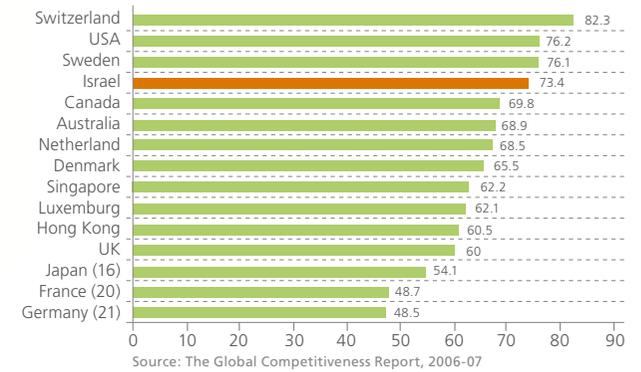
Israel has a modern infrastructure:

- State-of-the-art telecommunications
- World renowned research and educational institutions
- Highly advanced banking financial sector
- Large volume of high-tech- and science-based industry
- Supportive business environment
- Cutting edge technology and scientific breakthroughs

Communications and Computerization Technological Readiness

Rapid and efficient communications make it possible to shorten processes, receive information and knowledge in real time and quickly develop products and services. Thanks to the developed technological infrastructure in

Figure 3.3> Personal computers per 100 inhabitants, 2004 (hard data)



Israel, many companies have an available information technology system. According to IMD, **Israel was ranked 3rd out of the 61 countries** that participated in the survey, in Information Technology skills.

Israel has the same rank (3rd) in the Global Competitiveness Report in terms of its rate of technological readiness. Another indicator that refers to the technological readiness is the rate of personal computers within the population. In 2004, this figure registered at 73.4 personal computers per 100 inhabitants.

Telecom Services

Liberalization, deregulation, privatization, and advanced technological development spurred the rapid growth of the telecom services in Israel. Far from the single supplier of all telecom services a few years ago (Bezeq), Israel's residents now enjoy growing competition in all segments. This competition has had a large impact on Israeli telecom

Figure 3.2> Technological Readiness

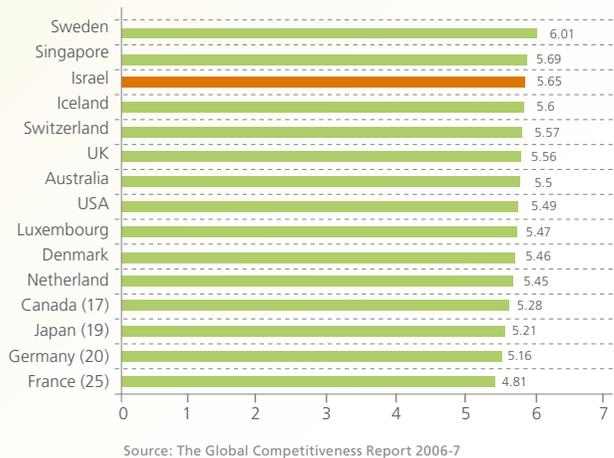
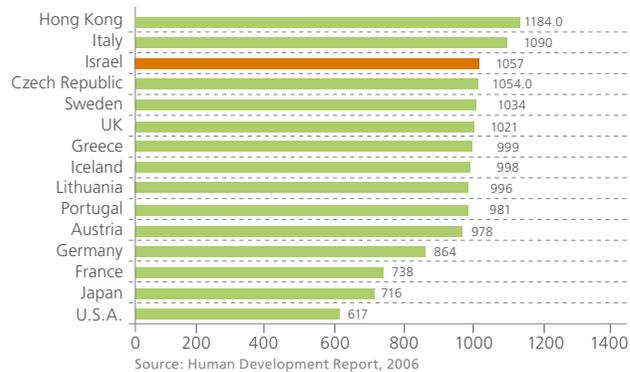


Figure 3.4> Cellular Subscribers
(per 1,000 people)



consumption and has improved the quality of the telephone infrastructure as well.

Despite the small size of the Israeli market, there are three cellular companies which operate three international telecom services and four broadcasting operators (3 by cable and 1 by satellite), all of which compete successfully for customer preference.

Cellular penetration in Israel has been so successful that **Israel was ranked 3rd in the world in the number of cellular subscribers** 1057 per 1,000 people use mobile phones in Israel.

Cyber Security

Cyber security is an established discipline for computer systems used for business management. It focuses on protecting valuable information stored on computer systems from adversaries who want to obtain, corrupt, damage, destroy, or prohibit access to it. Cyber security for manufacturing and control systems must also include protection against cyber or physical attack on computer

systems and their support systems by adversaries who wish to disable or manipulate them with intent to cause harm. In recent years, this discipline has become increasingly important because of the rapid technological development and transformation of industry companies into knowledge-based organizations. In Israel, there is high awareness of cyber security in organizations as shown by the IMD survey that examined to what extent corporations are adequately addressing **cyber security. Israel was ranked 8th out of 61 developed countries.**

Education

Education is the major source for knowledge sharing and creating high quality human resources. Israel's ability to harness education for creating innovative knowledge and motivation to develop high-tech in the future is a core capability, which provides growth potential and a long-term competitive advantage.

The Israeli government considers education an important measure for preparing the new generation for the future. Therefore, Israel's total expenditure on education as a percentage of GDP has the highest rate (8.5%) in comparison with other OECD countries.

According to IMD's 2006 survey, 42% of Israelis between the ages of 25-34 have completed at least tertiary education. In 2003, Israel was ranked 6th out of 57 countries surveyed by the IMD report.

Quality of Scientific Research Institutions

Israel has world-class education institutions. Research is carried out in Israel's seven universities, five technical colleges, and ten specialized research institutes.

Six of the universities are ranked among the best in the world: The Hebrew University in Jerusalem is in the top

Figure 3.5> Cyber Security

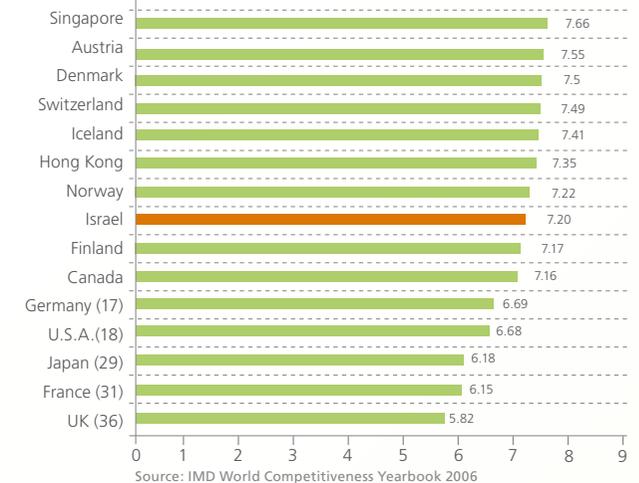


Figure 3.6> National Expenditure on Education
(as a Percentage of GDP, 2003)





Figure 3.7> Higher Education Achievement, 2003

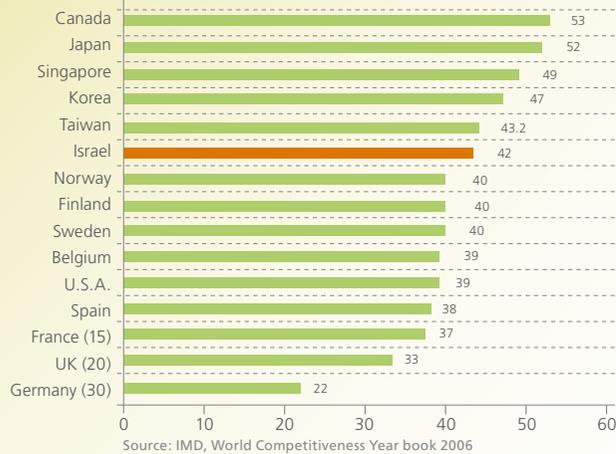
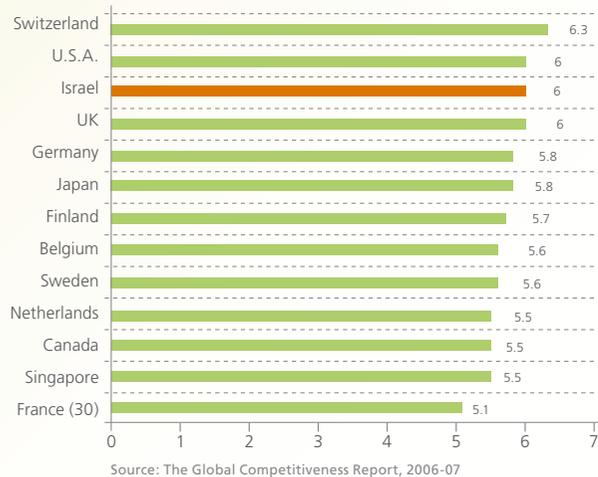


Figure 3.8> Quality of Scientific Institutions



100. The Technion Israel Institute of Technology, Tel Aviv University and the Weizmann Institute of Science are in the top 200. Bar-Ilan University and Ben Gurion University are in the top 300.

In a survey conducted by The Global Competitiveness Report 2006-07, **Israel ranked 3rd in quality of scientific research institutions out of 125 countries** that took part in the survey. This data demonstrates the high reputation of Israel's academic institutions in the eyes of its citizens. Furthermore, there is strong collaboration between universities and industry, resulting in highly developed knowledge transfer between companies and universities as is shown in the chart. According to the IMD survey, Israel was ranked 4th out of 61 countries in terms of knowledge transfer.

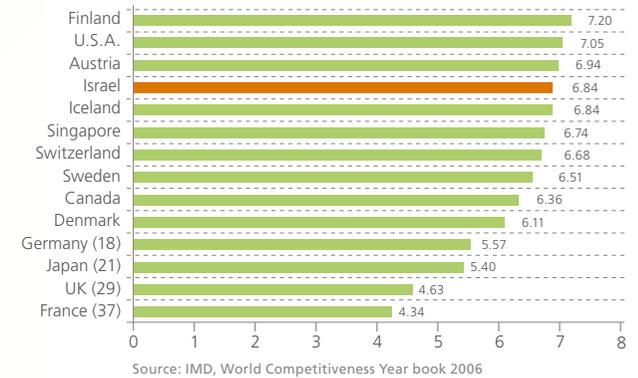
"Thanks to quality education, Israel is one of the most advanced countries in the world. Israel is advancing in high-tech even more than other developed countries"

Bill Gates, CEO, Microsoft, World Economic Forum, Davos, January 2000.

Legal Environment for Entrepreneurship

The government offers generous incentives for entrepreneurs, including government funding for R&D projects, grants for foreign investment in fixed assets, and tax deferment for up to 10 years. In addition, Israel offers investors advantageous conditions that include: an active capital market, a strong banking system, a robust venture capital sector, relaxed currency regulations, and comprehensive protection of trademarks, patents, and other intellectual property. This legal environment and its support of technological development have been examined in surveys conducted by IMD. **Israel was ranked 5th out of 61 countries** for having a legal environment that supports

Figure 3.9> Knowledge Transfer



scientific research.

The government's supportive policy toward entrepreneurship is also evident by the simplicity of starting new businesses or start-up companies in Israel. According to the IMD survey, only 12 days are required to form a new business or start-up company.

Figure 3.10> Legal Environment Supports Scientific Research



ISO – Medical devices

Israel is one of 158 member countries in the ISO organization. Over 140 organizations have been certified with ISO 14001 on environmental management systems, and dozens more are on their way to certification.

ISO is the world's largest developer of voluntary international standards for business, government, and society. The ISO survey has been carried out 15 times since it was first instituted in January 1993.

The year 2005 was the first year that the survey included certification for the medical device industry's ISO 9001: 2000-based quality requirement.

In the 2005 survey, **Israel ranked within the top ten (9th) for the number of ISO 13485**: certifications issued

with Israeli organizations being issued 107 certifications. Israel improved its rank from the 2004 survey in which it ranked 10th.

Agricultural Productivity

The industrial and service sectors are gaining in significance around the world. In contrast, the significance of the agricultural sector is diminishing.

These changes have not bypassed the Israeli economy. Consequently, Israel is intimately aware of the need to conduct intensive research in the agricultural industry in order to generate new technological developments in this sector within the next few years. In addition, Israel gradually started to invest more in technological agriculture products than in agriculture as a result of the country's limited natural resources, such as water and fertile land.

Figure 3.11> Number of Days to Start a Business

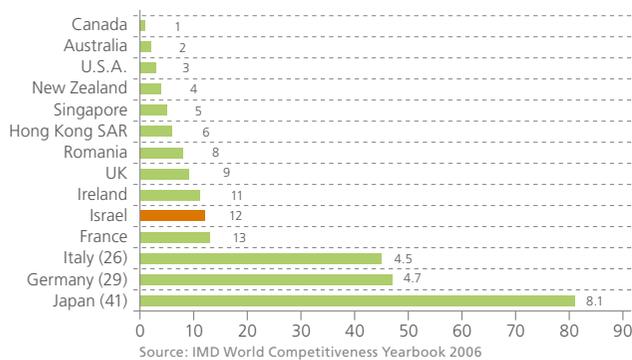


Figure 3.12 > ISO 13485 - Medical Devices - Quality Management Systems

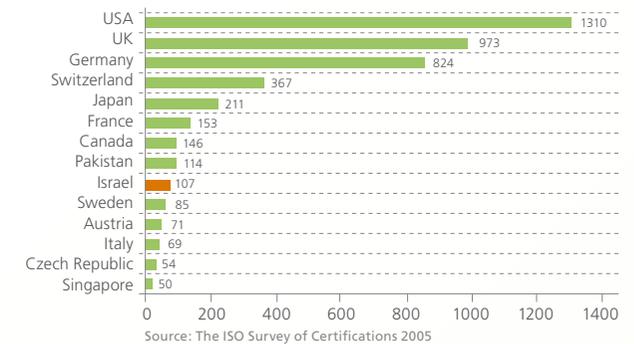
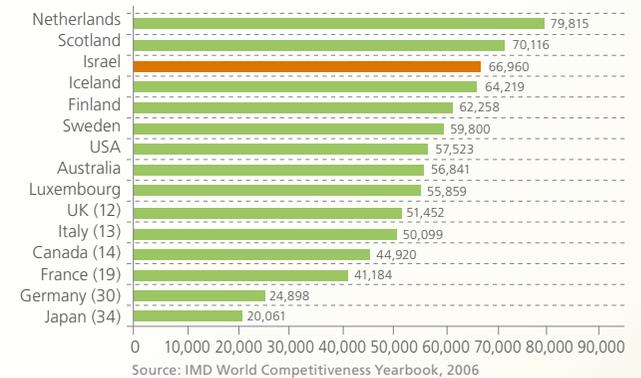


Figure 3.13 > Agricultural Productivity (GDP per Person employed in Agriculture (US\$))



As a result, there have been improvements in production technology and an increase in farm yields despite the reduced significance of agriculture in the labor market and the diminishing availability of farmland.

The indicator that highlights Israel's impressive accomplishment in this field in comparison to other countries is its agricultural technology and efficiency.

Israel's agricultural productivity in terms of the GDP per person employed in agriculture stands at \$66,960 and **ranks 3rd compared to other countries** according to the IMD World Competitiveness Yearbook of 2006.



4. Human Capital

Figure 4.1 > High-Skilled Labor Force
(Engineers per 10,000 Employees)

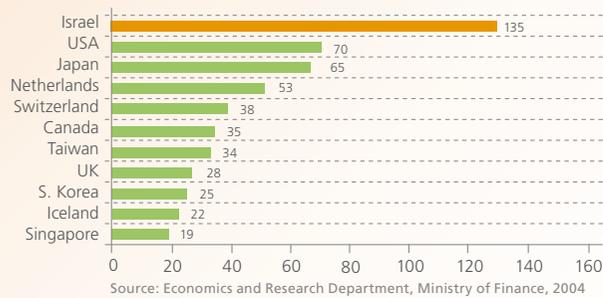
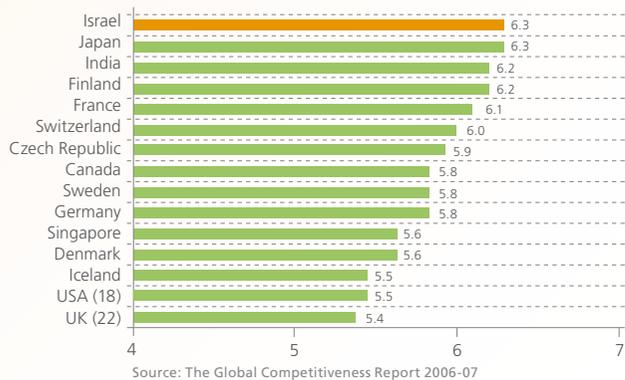


Figure 4.2 > Availability of Scientists and Engineers



Human capital constitutes a population's total capabilities as reflected in education, knowledge, health, experience, motivation, intuition, entrepreneurship - and expertise, all of which are the key success factors in creating a competitive edge in the present and the future.

Human capital provides the resources for the development and cultivation of other areas of intellectual assets. The singular importance of human capital is portrayed by its central position in the model of intellectual capital that we are utilizing here. The human factor is the most important link in the process of value creation. Thus, the success of this process depends on the development and renewal of human resources.

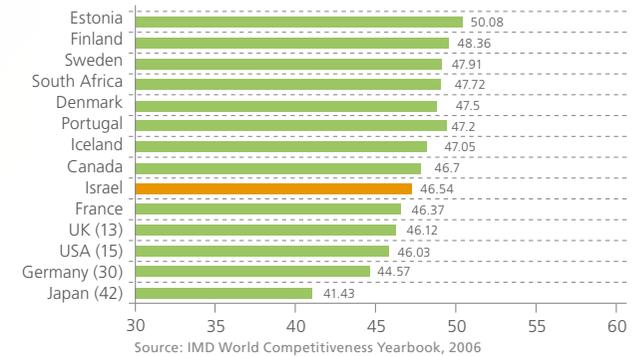
Israel has excellent human resources:

- **Highly educated workforce**
- **A multilingual population with cultural, historic, and business ties to almost every other nation**

Highly Educated Workforce

Israel has a highly educated workforce along with first class educational institutions. The quality of Israel's human resources is unmatched; Israel has 140 scientists and technicians per 10,000 employees, more than any other developed country. Israel has 135 engineers per 10,000 employees, which is the most concentrated number of engineers in the world. According to the Global Competitiveness Report of 2006, **Israel was ranked first in availability of scientists and engineers.**

Figure 4.3 > Female Labor Force
(as a percentage of total, 2005)



Equal Opportunities

The Israeli vision rests on the principle of equal opportunity for all its citizens – without prejudice on the basis of sex, race or religion – as a fundamental value.

A country that grants equal opportunity to all its citizens provides each citizen with a set of opportunities for exploiting his/her knowledge and talents, thereby wisely optimizing its inherent human resources. The indicator we chose to use in order to measure the extent of equal opportunities in Israel in comparison with other countries is the percentage of women in the labor force.

Female Labor Force

A full 46.54% of all employees in the Israeli economy are women, according to the IMD Competitiveness Yearbook. This is a relatively high rate compared to other countries such

as the US (46.03%), Germany (44.57%), Japan (41.43%). This data shows the emphasis Israel places on integrating women into the labor market as part of an overarching policy of equality.

Culture

The contribution of culture to the social climate and economy is recognized throughout the world as having great importance.

With a population of people hailing from more than 100 countries, Israeli society is rich in cultural diversity and artistic creativity. The arts are actively encouraged and supported by the government. The Israeli Philharmonic Orchestra performs throughout the country and frequently tours abroad, as do the Jerusalem Symphony and the New Israel Opera as well as other musical ensembles. Israel has several professional ballet and modern dance companies, which draw upon the cultural heritage of many immigrant groups. There is great public interest in the theater, the repertoire of which covers the entire range of classical and contemporary drama.

Israel boasts more than **120 museums**, including the Israel Museum in Jerusalem, which houses the Dead Sea Scrolls along with an extensive collection of regional archaeological artifacts, art, and Jewish religious and folk exhibits. Israelis are avid newspaper readers, with more than **90% of Israeli adults reading a newspaper at least once a week**. Major daily papers are in Hebrew; others are in Arabic, English, French, Polish, Yiddish, Russian, Hungarian, and German.

Israel has the second highest publication of new books per capita. Seven million Israelis buy 12 million

books every year making them one of the highest consumers of books in the world.

Health

The indicators for the health of the population as a component of human capital are measured by available resources for improving Israelis' health, the current yields of the medical system, and the status of the general health of the population.

Life Expectancy

The health status of Israel's population, as indicated by life expectancy at birth and the annual growth rate of the population, puts Israel in a respectable position compared to other countries of the industrialized western world.

Life expectancy in Israel is 80 years, identical to the life expectancy in Canada and France.

The high life expectancy in Israel is a result of a number factors including: the general infrastructure of high-standard health services, the high-quality of medical research and medical resources, an exceptionally well-developed hospital system, and a high number of physicians and medical specialists per capita in Israel

Physicians in the Medical System

The medical system in the State of Israel is rich in human resources, equipment, and medical technology. According to the Human Development Report, between 1990 and 2004, the number of physicians in Israel per 100,000 people was 382, placing **Israel 7th out of 63 developed countries**. The high level of health care and relatively wide range of resources bolsters Israel's policy of equality by enabling the country to provide a high level of medical care for all its citizens, including the poor population.

Figure 4.4 > Life Expectancy - 2004

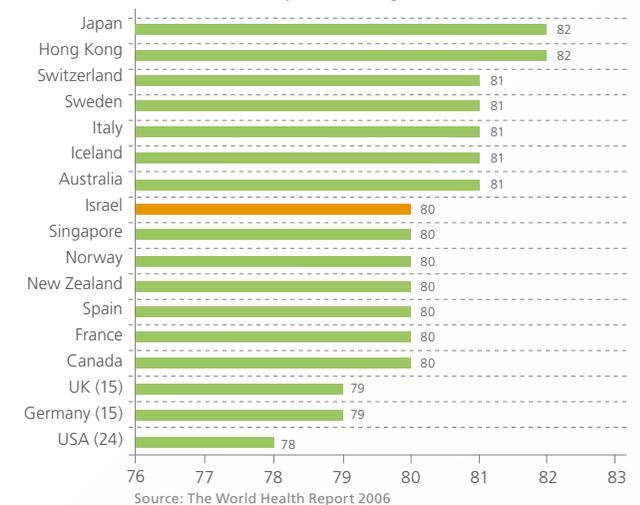
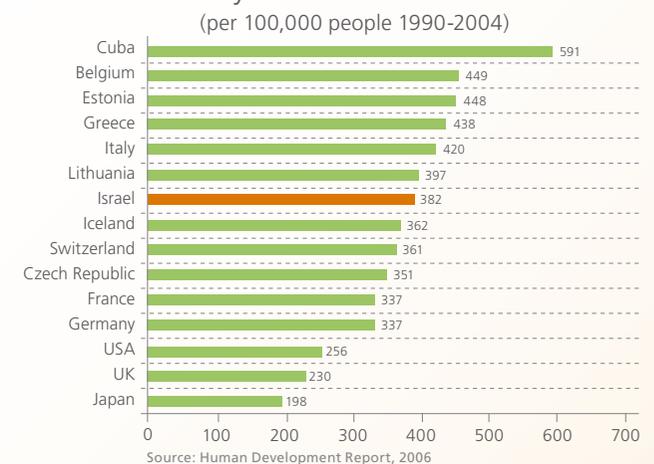


Figure 4.5 > Physicians





5. Renewal and Development Capital

Figure 5.1 > High Correlation between TASE and the NYSE

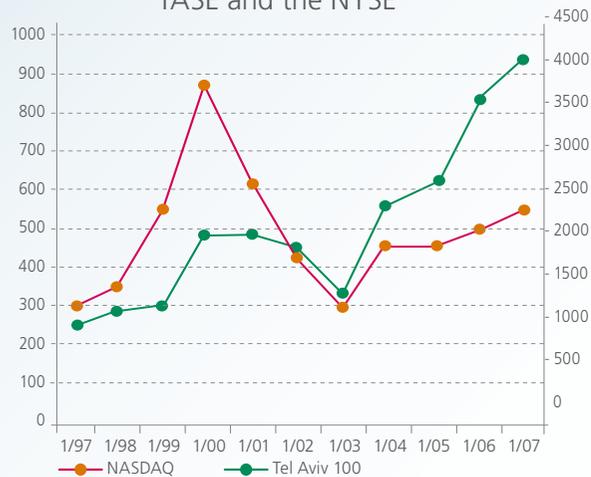
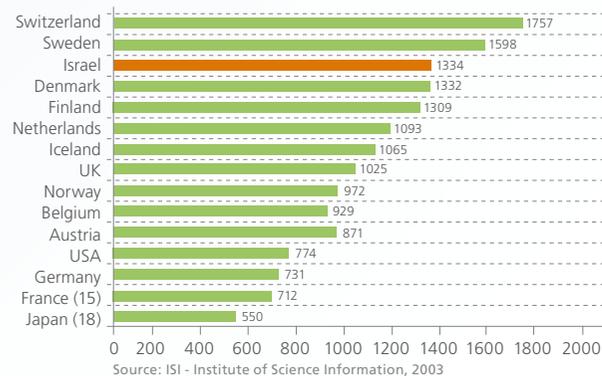


Figure 5.2 > Number of Scientific Publications (per million population, 2002)



Renewal and development capital focuses on Israel's main potential for future growth.

In a dynamic environment, early identification of driving forces and their translation into business opportunities through scientific activity will lead to the country's future prosperity. During the years of its existence, the State of Israel has made great contributions to scientific research and international cooperation.

Scientific research is one of the mainstays of Israel's growth. Israel is one of the "laboratories" for brilliant ideas. This is evident by the large number of Israeli companies (over 100) that are traded on the Nasdaq. Israel is ranked 2nd after Canada in the number of companies traded on the American Technology Stock Exchange.

In order to examine Israel's potential, one must analyze various indicators that focus on Israel's investments and yields in technological development and next-generation products.

The Competitive Edge of Israel:

- Israel has been described as the "Second Silicon Valley" in the world.
- Israel is one of the largest centers in the world for start-up enterprises, with more than 2500 start-up companies.

- Israel's cutting-edge industries include: agro technology, biotechnology, computer-aided education, and data communications.

Israel's Scientific Advantage

The State of Israel has built a strong scientific community, dedicated to excellence and innovation. According to 2004 Thomson ISI Data, during the years 1993 to 2003, 37 Israeli scientists appeared on the list of the best 0.01% of scientists in the world.

Scientific Publications in the World

The extent and impact of active research in Israel is defined by two main criteria – the productivity of the scientific community and the quality of research as compared with the rest of the world. Productivity is the extent of activity within the academic community, one measure of which is the number of publications per capita. One measure of quality of research is the number of times a paper is cited in other research projects.

This rests on the assumption that the more a paper is cited, the more it is assumed to be of high quality and to have made an impact in its field.

According to the Institute of Science Information (ISI), **Israel was ranked 3rd in the world in the number of scientific publications per million people between 1999 and 2002.**

In some fields, Israeli scientists achieved particularly outstanding output relative to other countries. As can be seen in the table below, Israel ranked in the top 10 in terms of both productivity and quality in most of the scientific fields.

With the help of the National Infrastructure Scientific Program of The Ministry of Science and Technology, Israel has developed national expertise in the most cutting edge fields in science, such as nanotechnology, genomics, stem cell research, and the convergence of information technology with nano-bio research.

Another important indicator of renewal and development capital is the level of collaboration between local

Israel World Share of Science (1999-2003)

Field	Productivity Rank	Quality Rank
Mathematics	1	11
Computer Science	2	3
Physics	2	9
Molecular Biology & Genetics	3	4
Engineering	3	12
Clinical Medicine	4	22
Chemistry	4	5
Biology & Biochemistry	5	10
Astrophysics & Space	6	2
Materials Science	9	1
Ecology	11	24

Source: The S. Neeman Institute, The Technion, 2006

universities and industry in research and development. Such collaboration is critical for developing new innovative solutions, ideas, products, and patents. According to the Global Competitiveness Report, Israel scored 5.2 on a scale of 1 to 7 (1=minimal or nonexistent, 7= intensive and ongoing) for the level of university/industry research collaboration. **Israel was ranked 6th out of 125 countries** surveyed by the report.

Patents

Registration of Patents

Thanks to the Israeli government's policy aimed at encouraging knowledge transfer between academia and industry, Israel's scientific advantage has translated into a growing number of patents registered in the US and Europe.

According to Business Data Israel (BDI) 2003, **Israel was ranked 3rd out of 148 countries** in terms of the number of patents per 10,000 people.

According to this research, between 1999 and 2003, the number of Israeli patents registered in the US increased by more than 69%. In 1999, the number of registered patents was only 748, while this number rose to 1265 patents in 2003.

From 2002 to 2003, the number of registered Israeli patents increased by 20%.

Figure 5.3> University/industry research collaboration

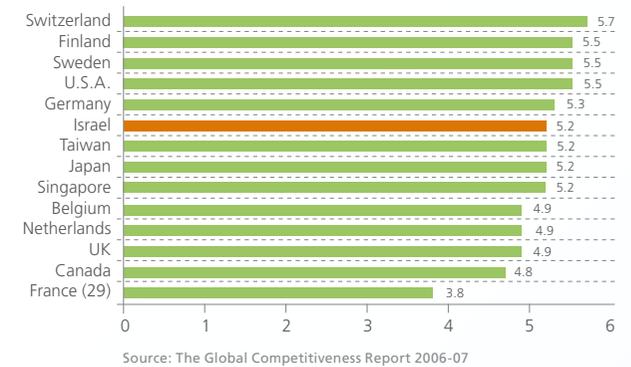


Figure 5.4> Number of patents registered in the US during 2003

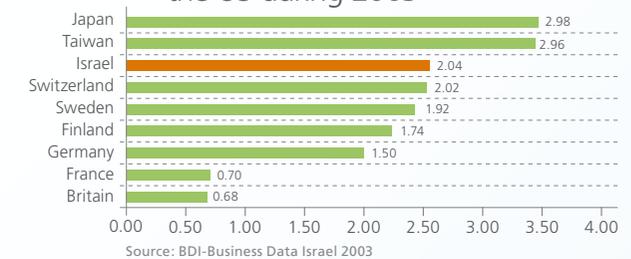




Figure 5.5> EPO patent applications
(owned by universities, 2001-03)

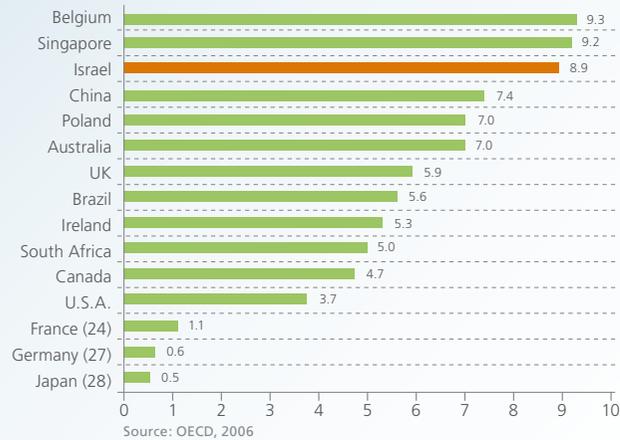
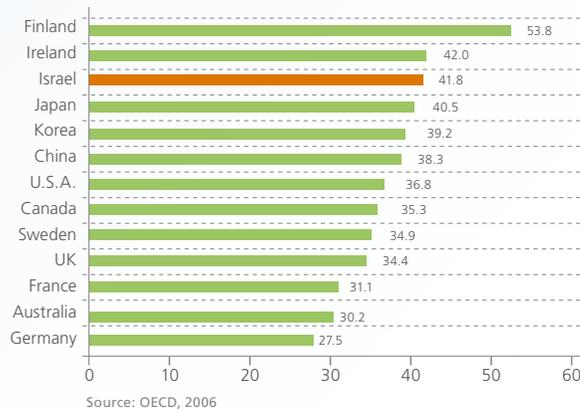


Figure 5.6> ICT-related patents
(as a percentage of national total PCT filings, 2001-03)



Israel also placed high in the rankings of **EPO** (European Patent Office) **patent applications owned by universities**. An OECD report ranked Israel **3rd** – among countries with more than 150 EPO applications registered between 2001 and 2003.

Israel also ranked high (3rd) in ICT-related patents among countries with more than 250 patents filed under the PCT between 2001 and 2003, according to the OECD 2006 report.

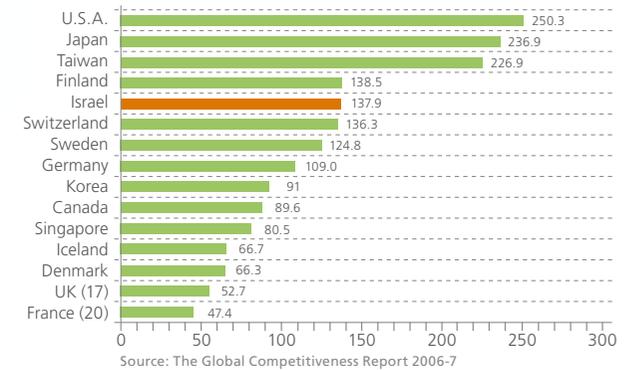
Another important indicator is the **utility of patents**. Utility of patents is measured by the number of patents for inventions. According to the Global Competitiveness Report, the number of Israeli patents for invention granted between January 1 and December 31 in 2005 was 137.9 per million people, placing Israel 5th out of 125 countries.

Biotechnology

Israel is home to some of the world's leading biotechnology research centers, renowned for their excellence in areas such as autoimmune diseases, cancer, and neurology.

Is Israel about to experience a breakthrough in this industry? According to Monitor Company Report (2001), this is indeed possible. Not surprisingly, growth in the Israeli medical device and biotechnology industries has been tremendous. **Between 150 and 200 new life science companies are established in Israel every year.**

Figure 5.7> Utility patents
(per million population, 2005)



Venture capital investment in Israeli life science companies has also grown significantly. Close to \$200 million were invested in Israeli life science companies throughout 2003 – a two-fold increase in life science investments since 1997.

There are 24 technology incubators in Israel, more than 20% of them involved in projects in the field of biotechnology.

Israel is third in the world in terms of its number of biotechnology start-up companies, according to the Southern-California – Israel Chamber of Commerce (SCICC). Sales from the biotechnology sector generated \$1.8-2.3 billion in 2004. According to the Israeli Ministry of Science, Israel's share of total world biotechnology sales

is about 2.5%. The OECD report **rank Israel 7th among countries** with more than 250 patents filed under PCT between 2001 and 2003.

National Expenditure on Civilian Research and Development

Over the past few years, research and development institutions and start-up high-tech companies have been considered the pioneers of Israel's growth and have come to be viewed as national symbols. In fact, this process has been in the making for the past 30 years. In the last three decades, investment in research and development has led to a 30% increase in the GDP. **Research and development is the key success factor in Israel's economic growth and the country's integration into the globalized world.**

Research and development is a vital, ongoing process in a knowledge-based industry. This process is capable of transforming new ideas into products of high added value within a short period of time. This innovation dynamic has the potential to shrink the balance of payments deficit, thus accelerating progress towards economic independence. Thanks to research and development, Israel enjoys a competitive edge in the world market despite its small size. The degree of innovation indicator is a reflection of expenditure on civilian research and development. It does not, however, include security-related research and development because the top-secret nature of such data makes it inaccessible. This factor should be taken into

account when comparing Israel to countries where security-related research and development is low. Despite this difficulty, **Israel was ranked first out of all developed countries in terms of national expenditure on civilian research and development** as a percentage of the GDP, which in Israel stands at 4.55%.

Foreign Investment in Israel

Israeli economic policy has created a climate that is conducive to venture capital investment by liberalizing foreign currency and by offering significant government incentives and tax breaks for investors.

In 1991, there was only one venture capital fund in Israel; today, there are over 65 venture capital funds investing in young companies. Israel-based venture capitals have approximately \$2 billion at their disposal for new investments.

Israel is attractive to foreign investors because of its excellence in technology, particularly in the software, communications, security, and biotech sectors. As is shown in the IVC data, most investments in Israel are made in the high-tech sectors with communications receiving 35% and software 18%.

"Outside of the US, we invest in only one other country, that's Israel."

Julien Nguyen, Managing Partner Applied Materials Ventures, September 2003

Figure 5.8> Biotechnology patents
(as a percentage of national total PCT filings)

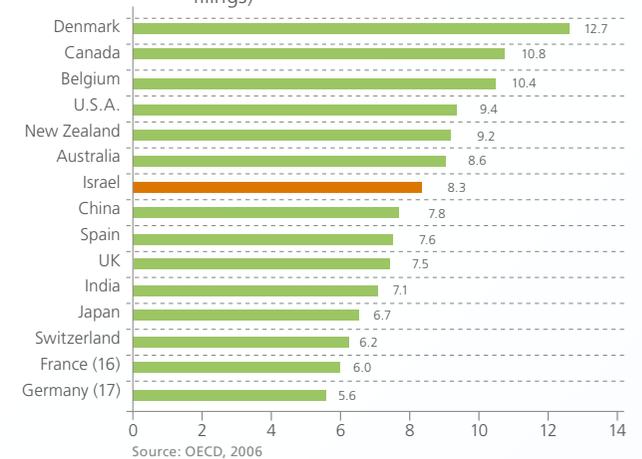


Figure 5.9> Total Expenditure on R&D
(as a percentage of GDP 2004)

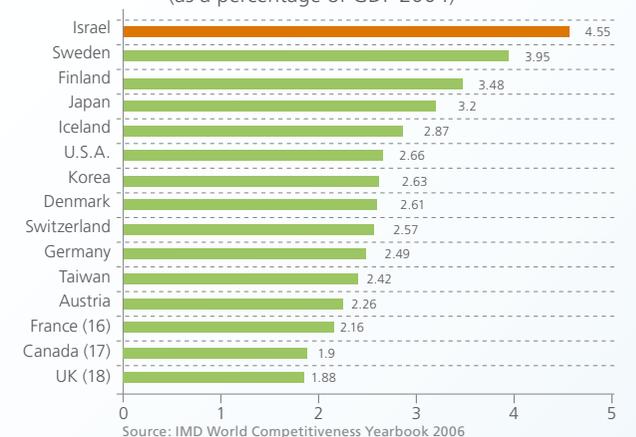
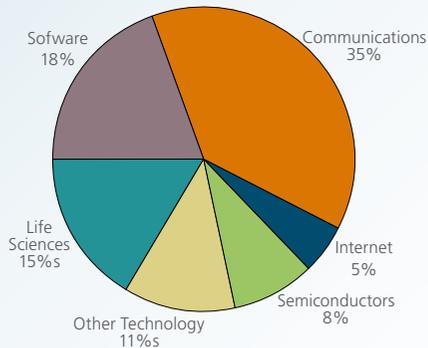


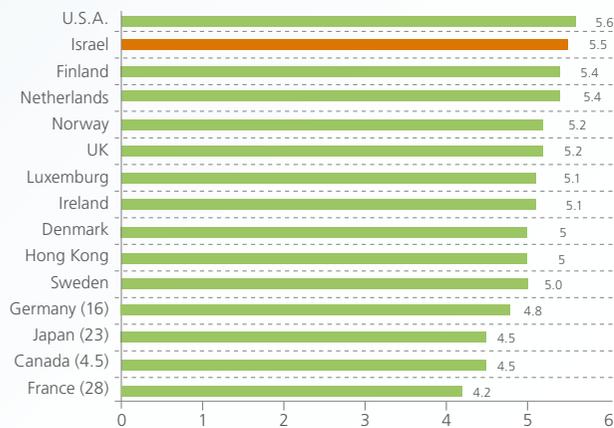


Figure 5.10> VC Investments by Sector, 2006



Source: IVC, Israel Venture Association, 2007

Figure 5.11> Venture Capital availability



Source: The Global Competitiveness Report, 2006-07

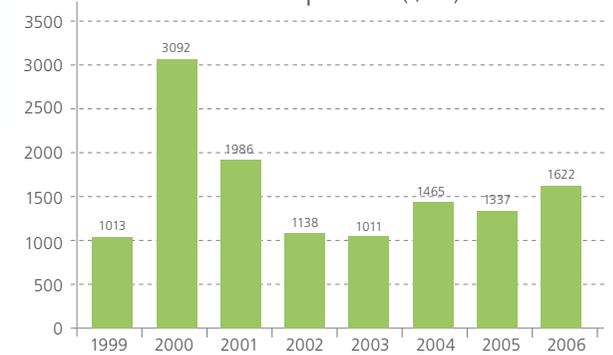
Start-up companies and entrepreneurs with innovative but risky projects in Israel can easily find venture capital. According to the survey conducted by the Global Competitiveness Report on venture capital availability, **Israel was ranked 2nd in venture capital availability**, preceded only by the US.

It is the aim of Israel's Office of the Chief Scientist (OCS) of the Ministry of Industry, Trade and Labor to leverage technology in Israel as a means of boosting the economy, supporting innovation and R&D, utilizing Israel's skilled resources, enhancing the knowledge base of Israeli high-tech industries, and promoting cooperation in R&D both locally and internationally. In the last few years, Israel has recognized the need to establish a system that includes entrepreneurs, venture capital funds, investors who furnish capital, and a capital market in order to successfully attract venture capital.

In the figure, one can clearly see the differences between the situation in 2000 when the high-tech industry flourished and the situation between 2001 and 2003 - when the amount of capital raised in the high-tech sector dipped. The figure also shows that the Israeli economy recovered in 2004, once again inducing a positive trend in the high-tech sector.

Therefore, professional investors are keen on investing funds in Israeli companies, and multi-national companies seek to acquire technologies and companies in Israel.

Figure 5.12> Capital raised by Israeli high-tech companies (\$m)



Source: IVC, Israel Venture Association, 2007

Entrepreneurship and Start-Up Companies

Prior to the 1980's, the Israeli economy was focused around traditional industries. Since the 1980's, however, the high-tech explosion has transformed the Israeli economy. In 2006, high-tech exports comprised 48% of Israel's industrial exports.

The government supports more than 200 projects in government-funded incubators. There are 24 technological incubators in operation. 1000 projects have graduated from these government incubators in the last decade, of which 57% have received further private investment. The government has also set up technology parks and implemented software development projects.

Israel has the third largest concentration of start-up companies in the world, preceded only by Silicon Valley and the metropolitan Boston area. These start-up companies provide Israel its main potential for future economic growth.

It appears that the secret to the success of Israeli start-up companies lies in a quintessential characteristic of Israeli society – the ability to operate under conditions of uncertainty and rapid changes, long a necessity of life in Israel. Israeli entrepreneurs are blessed with traits vital to their trade, such as willingness to take risks, the ability to make quick decisions, the ability to learn quickly, and a tremendous desire for success. As such, it is not surprising that Israeli companies are known for being innovative. According to a survey conducted by the Global Competitiveness Report, **Israel was ranked 8th in terms of its companies' capacity for innovation.** On how companies obtain their technology, Israel scored 5.6 on a scale from 1 to 7 (1=exclusively from licensing or imitating foreign companies, and 7= by conducting formal research and pioneering their new products and processes).

Israel ranked 5th in entrepreneurship. It is clear from these rankings that a substantial number of Israeli companies have a reputation as leaders in their fields. In addition, a considerable number of small, and medium-sized Israeli companies have succeeded in the international stock market.

Figure 5.13> Capacity for Innovation

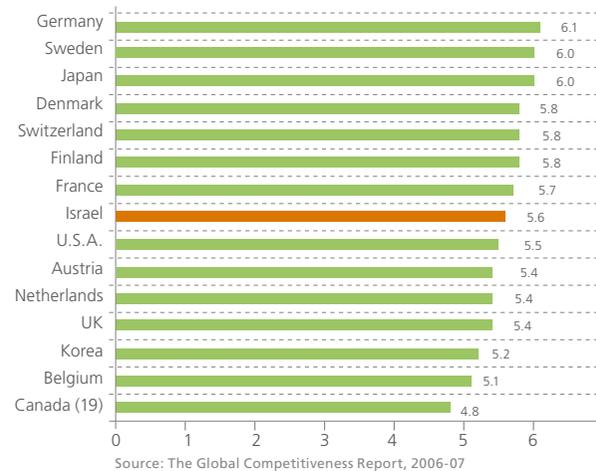
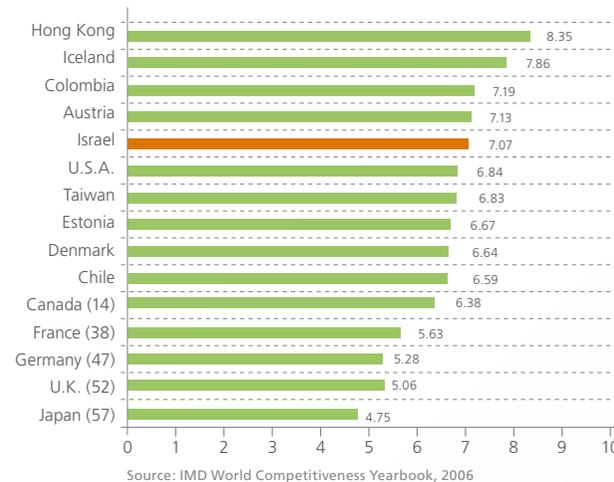


Figure 5.14> Entrepreneurship





Summary

This 3rd publication of the Intellectual Capital of the State of Israel is a special edition, because it summarizes the achievements of the country in its celebration of its 60th year of independence!

This document presents a holistic and organized picture of the knowledge and intellectual assets that Israel has achieved. It presents the hidden values that will lead to economic growth and to the country's increased integration in the global market.

Over the past few decades, the Israeli government has led a very clear strategic policy of encouraging innovation and enhancing international trade co-operation between Israel and other countries. Thanks to this policy, Israel became attractive to foreign investors and multinational corporations.

Research and development institutions, start-up, and hi-tech companies in Israel have been considered pioneers of growth and a national symbol. In fact, this has been an ongoing process for the past 30 years!

The country's excellent technology, particularly in the software, communications, security, and biotech sectors, attracts foreign investors, mainly from the US and from Europe, who are aware of the great economic potential for investing in Israel.

This study shows that, since its establishment, Israel has succeeded in accomplishing great **technological achievements**. Israel is leading in various fields such as agro technology, biotechnology, computer-aided education, and data communication. Furthermore, the country's competitive edge is **excellent human capital** in the form of a highly educated workforce that is well integrated in the hi-tech sector and in research and scientific activity. In addition, Israel provides **a modern infrastructure** - a supportive business environment which includes a highly advanced banking and financial sector and legal protection of foreign trade marks and patents.

The profile of Israel that emerges from this comparative study with other developed countries, is clearly one of a nation that is a superior partner for global business and worldwide collaboration.

In accordance with Israel's vision for the future, this report presents Israel's strategic assets which will enhance Israel's future economic growth.

www.moital.gov.il

Part 2

The Office of the Chief Scientist an Overview



Jerusalem, November 2007



Introduction

Israel derives great strength and technological excellence from its human capital along with the academic and technological infrastructure it has developed. In order to maximize the exploitation of this human potential and convert it into a competitive advantage, there is a pressing need to invest in industrial research and development. Such an investment has both direct and ancillary effects on the market and becomes the engine that drives the Israeli economy.

The Office of the Chief Scientist (OCS) within the Ministry of Industry, Trade and Labor is responsible for executing the government policy relating to industrial R&D support. The OCS objectives are to support industrial R&D, encourage entrepreneurs in high-tech start-up companies, leverage Israel's highly capable scientific and technological labor force, facilitate the academic industrial interface for the transfer scientific know-how and technology, and, in general, to stimulate cooperation in state of the art R&D at national and international levels.

The Law for the Encouragement of Industrial Research and Development – 1984 constitutes the general mandate of the OCS. The OCS also offers a range of additional support programs within the framework of directives from the Director-General of the Ministry of Industry, Trade and Labor.

The revised law allows, but does not encourage, the transfer of both know-how and manufacturing rights abroad under clearly defined costs and conditions.

International Activities

The Government of Israel, through the OCS, has signed agreements and created funds together with other governments to actively support and encourage industrial R&D cooperation between Israeli companies and industries overseas. Mutual benefits of international cooperation in industrial R&D are based on the strength of each of the cooperating companies. It will usually include access to know-how, R&D infrastructure, and technologies that are not otherwise readily available to the participants as well as access to new markets and the needs of the captive market of each industry. Potential strategic partners can be identified, resulting in heightened awareness of market opportunities in partnering countries, and enhanced identification of potential trade strategies. Israel can act as a trade bridge for companies wishing to expand their activities into these markets via its free trade agreements with North America, the EU, and other countries.

The government's policies and OCS activities have created an environment of good investment opportunities and support that has attracted hundreds of international companies including well-known multinationals, to set up research centers and enterprises in Israel.

MATIMOP – Israeli Industry Center For R&D

MATIMOP is a governmental non-profit organization aiming to promote the development of advanced technologies in Israel and to create fruitful international partnerships through industrial cooperation and joint ventures. MATIMOP acts on behalf of the OCS as the national agency in charge of encouraging and assisting participation of Israeli enterprises in international bi-lateral or multi-lateral cooperation programs for industrial R&D.

MATIMOP implements most of the bi-Lateral and multi-Lateral R&D cooperation agreements on behalf of the OCS and thus serves as a contact point for various agreements. As such, MATIMOP is in constant contact with most Israeli Hi Tech companies and maintains a database listing more than 3,000 companies of all sizes, interested in international cooperation. One may search the database by technology, application, keyword, or alphabetically at: <http://www.matimop.org.il/newrdinf/company/compsrc.htm>

a. Bi-National Funds

Two nations contribute a pre-determined sum to a bi-national fund intended to support cooperative projects. In the proven model, each fund establishes its own criteria and procedures, usually within a similar framework. A board of directors is appointed by the two governments, which is sovereign in its decision making. The funds are managed and grant payments are administered by a non-profit organization. It requires no equity in the companies supported and no intellectual property rights in their products; nor does it interfere in formulating or running the relationships between the partnering companies. Besides financial support for R&D projects, the foundations also engage in searches for business partners in both countries, for the purposes of collaboration in technology development projects.



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a. 1. BIRD Israel-U.S. Binational Industrial R&D Foundation

Introduction: For 30 years, BIRD has been a catalyst for joint Research & Development between U.S. and Israeli companies. BIRD brings together promising Israeli companies with their medium-to-large U.S. counterparts. BIRD supports U.S. companies in their search for innovation outside the company borders, by exposing them to emerging Israeli companies and novel technologies. BIRD is constantly seeking new opportunities and monitoring emerging industries. Lately, BIRD has emphasized the emerging Cleantech sector, specifically, renewable energy and water technologies.

The approval of the BIRD Foundation Board of Governors is based on a review by the U.S. National Institute of Standards and Technology (NIST) and the Office of the Chief Scientist (OCS) of Israel's Ministry of Industry and Trade, and Labor.

Criteria: Any pair of companies, one Israeli, one American, may jointly apply for BIRD support so long as they have the combined capability and infrastructure to define, develop, manufacture, market, sell, and support an innovative product based on industrial R&D. In many cases, the Israeli company is involved in the development of cutting-edge technologies, while the American company offers large-scale product development and commercialization. Established Israeli companies may team with U.S. start-ups as well. The "BIRD Model" has been adapted to deal with long term biotechnology projects.

Details: The BIRD Foundation offers conditional grants for joint development projects on a risk-sharing basis. The Foundation funds up to 50% of each company's R&D expenses associated with the joint project. Royalties are due only if commercial revenues are generated as a direct result of the project. If the project fails, BIRD claims no repayments. In the case of longer-term Pharma/Biotech projects, the repayments may be based on milestones.

BIRD requires no equity in the companies supported and no intellectual property rights in their products, nor does BIRD interfere in formulating or running the relationship between the partnering companies, including their agreements on co-development and co-manufacturing.

Since its inception 30 years ago, BIRD funded over 740 projects with leading companies in the U.S., including: General Electric, Applied Materials, Motorola, Bayer, Johnson & Johnson, Guidant, American Red Cross, Bio-Rad, Texas Instruments, Molex, Telcordia, Spansion, SanDisk, Eastman Kodak, and many others. BIRD is considered a great success by both the U.S. and the Israeli establishments having been instrumental to the development of the Israeli hi-tech sector, and to the U.S.-Israeli technology relationship. BIRD projects have produced billions of dollars in sales and each year 20 to 25 new projects are approved in all sectors.

The BIRD team also manages **TRIDE** – a Trinational Fund, bringing together **Israel-Jordan and U.S.** companies to perform projects following the BIRD model. In addition to NIST and OCS reviews, projects are reviewed by the Jordanian Royal Scientific Society, through the Jordanian Ministry of Industry and Trade.



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a. 2. CIIRDF – Canada-Israel Industrial R&D Foundation

Introduction: The Canada-Israel Industrial R&D Foundation (CIIRDF) was established in 1994 to promote and support collaborative R&D between firms in both countries. The Foundation offers grants for joint R&D projects, as well as engaging in searches for R&D partners in Canada and Israel for the purposes of collaboration in technology development projects.

Criteria: Eligible companies for CIIRDF's funding are firms operating and headquartered in Canada and Israel. At least 30% of the R&D work must be done in either Canada or Israel. CIIRDF is also entrusted with the implementation of the Ontario agreement and the focus of Ontario projects will be on Convergent Health and Cleantec technologies.

Details: CIIRDF's support includes funding of both feasibility studies and full projects. Support can reach a maximum of 50% of the eligible R&D costs of joint projects up to a ceiling of C\$800,000. CIIRDF requires no equity in the companies supported and no intellectual property rights in their products. It requires only that the nominal grant is paid back interest free on the basis of royalties if commercial revenues are generated as a direct result of the project.

a. 3. KORIL-RDF - Korea-Israel Industrial R&D Foundation

Introduction: The Korea-Israel Industrial R&D Foundation (KORIL-RDF) was jointly incorporated by the Korean and Israeli governments in 2001 based on an agreement concluded in 1998.

KORIL-RDF aims to advance Korea-Israel science and technology, business-to-business, and ultimately overall economic and trade relations by promoting, facilitating, and supporting joint industrial R&D projects between Korean and Israeli high-tech companies. The Foundation offers grants for joint R&D projects, as well as engaging in searches for business partners in Korea and Israel, for the purposes of collaboration in technology development projects.

Criteria: At least 30% of R&D development must be done in either Korea or Israel. Joint technology development can range from a few weeks, in the case of a feasibility study; up to a maximum of three years in the case of a full scale project.

Details: Financial support for the joint R&D projects is divided into three categories – feasibility study; mini-project, and full scale project. In the case of a full-scale project, support can reach a maximum of 50% of the allowed joint R&D expenditure, up to a ceiling of \$1,000,000.



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a. 4. SIIRD – Singapore-Israel Industrial R&D Foundation

Introduction: SIIRD was established in 1997 to promote, facilitate, and support joint commercially viable industrial R&D projects between Singaporean and Israeli high-tech companies. The Economic Development Board (EDB) of Singapore and the Office of the Chief Scientist (OCS), Ministry of Industry, Trade and Labor of Israel are the two co-operating government agencies responsible for setting up of this joint non-profit foundation.

Criteria: Joint technology projects may include technology and knowledge applications, product's development towards beta-site testing and innovative systems integration. Eligible companies for SIIRD's funding are firms operating and headquartered in Singapore and Israel with at least 30% of the R&D work handled in either Singapore or Israel.

Details: Financial support for the joint R&D projects is divided into three categories – feasibility study, mini-project, and full scale project. In the case of a full-scale project, support can reach a maximum of 50% of the allowed joint R&D expenditures, up to a ceiling of \$ 750,000, and not more than \$500,000 in one year. Joint technology development is preferably under 24 months and geared towards commercialization of the developed technologies.

b. *Bi-National Cooperation Agreements*

Introduction: These agreements provide a framework for encouraging Bi-National Industrial R&D Cooperation through financial support to joint R&D projects. The national funding authorities in the respective countries participating in the project implement the approval process.

Details: In Israel, the OCS is in charge of the operating methods and approval procedures and MATIMOP, operating on its behalf, is in charge of implementing these agreements, by raising the awareness for international cooperation among Israeli enterprises, by assisting to identify foreign partners and by assisting in creating and qualifying joint R&D projects between Israeli and foreign companies.

MATIMOP is facilitating each year a large number of joint R&D ventures through the Eureka Framework and through 14 cooperation agreements with European countries, including Denmark, Finland, Holland, Italy, Slovenia, Belgium, Portugal, France, Spain, Turkey, Germany, Ireland, Sweden and Greece.

MATIMOP has recently launched two new cooperation programs with Argentina and Brazil. These programs are the first ones generated with Latin-American countries.

The Office of the Chief Scientist and MATIMOP has recently decided to put special emphasis and to invest their efforts in promoting industrial R&D collaboration with Asia, and specifically with India and China, both at the Federal level and at the regional level. Additional Bi-National agreements are available with the following countries / states: Hong-Kong, Taiwan, Maryland (USA), Victoria (Australia), Ontario (Canada).



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c. *The Global Enterprise R&D Cooperation Framework*

Introduction: The Global Enterprise R&D Cooperation Framework, recently established within the OCS, is attracting prestigious multinational corporations (MNC) to forge cooperation deals for investment in Israeli startups. Partnerships between the Israeli government and multinational companies have the potential to propel R&D projects directly onto the world market.

This cooperation format offers a lot of advantages for both parties. Israeli startups that are targeting a multinational as a client, benefit by involving their future partner in the development stages and thereby boosting their chances of success. The cooperation with multinationals also opens established export markets for the Israeli company. The multinationals gain a channel via the OCS to a large number of Israeli startups and benefit from sharing the risk of R&D investment with the OCS. Among the MNC'S participants in the program are: ALCATEL, IBM, MICROSOFT, ORACLE, SUN MICROSYATEMS and DEUTSCHE TELECOM.

Details: The program taps into the independent world power of multinational corporations with at least \$1 billion in annual sales and significant investment in R&D. Israeli companies, whose annual revenues hasn't exceeded 70 million USD during the last 3 years, are qualified to apply for the OCS grant of up to 50% of the approved joint project's budget.

The MNC will provide the Israeli company an equal amount that may consist of cash investment and/or other assistance: borrowing equipment, discounted software licenses, using labs, technological guidance, business mentoring, etc.

d. *US-Israel Science & Technology Commission*

Introduction: This program was a joint initiative launched in 1994 by US President Bill Clinton and the late Prime Minister Yitzhak Rabin. The Commission provides a unique and highly beneficial environment for promoting bi-national cooperation at the highest levels of government and industry. Together with its implementation arm, the U.S.-Israel Science and Technology Foundation, the Commission focuses on areas of bi-national strategic importance, such as Life Sciences, Homeland Security, and Renewable Energy. The Commission performs the task as a catalyst for progress by identifying and removing impediments and building the bi-national infrastructure for mutually beneficial economic and technological cooperation.

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e. *Multinational Agreements*

e. 1. The European Union's Framework Programs for R&D (FP)

The European Union's Framework Programs (FPs) are the main financial tools through which the European Union supports research and development activities that cover almost all scientific disciplines. It is the largest program in the world, bringing together industry and academia.

Israel is the only non-European associated state fully participating in the Framework programs.

ISERD – The Israel-Europe R&D Directorate for EU FP, operating through the Office of the Chief Scientist of the Ministry of Industry, Trade and Labor, aims to promote joint Israeli-EU R&D ventures within the EU's R&D Framework Program. ISERD is an inter-ministerial directorate established by the Ministries of Industry, Trade & Labour, Science and Technology, Foreign Affairs and Finance, and the Planning and Budget Committee of the Council for Higher Education.

ISERD

- Actively assists academic and industrial entities in preparing and submitting their EU-RTD program proposals.
- Provides help identifying various partners and business opportunities.
- Offers assistance, training, and supporting services to interested parties.
- Works on information dissemination and raising awareness within Israel.
- Organizes events such as training sessions, seminars, conferences, and newsletters.

ISERD represents Israel in the Framework Program's management committees at the European Commission. It is also responsible for the promotion of Israeli interests in the Framework Program's key organizations, such as research institutions and universities, as well as for promoting and raising awareness of the program among industrial and academic communities in Israel.

More than 2000 Israeli entities participated in various R&D projects, in the 4th, 5th, and 6th Framework Programs. This is part of the commitment by Israel's academic and business communities to international cooperation as the best way to achieve social, economic, and scientific progress and understanding.

The current Framework Program - FP7 - is operating during the years 2007-2013 with a budget of €50 billion.



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e. 2. EUREKA

Introduction: EUREKA is an initiative by nearly 40 European governments (including Israel) and the EU to create a pan-European network for market-oriented, industrial R&D. The objective is to bring high-quality R&D efforts to the market and to use the multiplying effects of cooperation.

EUREKA is the largest European platform for industrial innovation projects that are funded through national and regional schemes in the participating countries. In Israel, the Office of the Chief Scientist supports Israeli companies participating in Eureka projects.

Details: Eureka is a very non-bureaucratic and “SME friendly” framework: over 40% of Eureka project participants are SME’s.

Among Eureka’s activities are the Eureka Clusters, industry-led thematic initiatives in a particular area of strategic interest for transnational, cooperative R&D. Cluster projects are initiated by major companies which first develop road-maps to lay out future directions for industrial R&D in selected areas. Most clusters are active in ICT fields and among their initiators are Philips, Siemens, Alcatel, Thomson, Ericsson, Nokia, France Telecom, Telefonica, Deutsche Telekom, and other market leaders.

Israel is among the most active Eureka members and currently Israeli Companies participate in more than 10% of ALL Eureka projects and in more than 20% of ALL Eureka Cluster projects.

MATIMOP is the National Coordinator for EUREKA - visit www.matimop.org.il



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e. 3. EUROSTARS

The Eurostars Programme is the first European funding and support program specifically dedicated to R&D performing SMEs and start-ups. Eurostars aims to stimulate them to lead international collaborative research and innovation projects by easing access to support and funding.

Eurostars projects can address any technological area, but must be market-driven, have a civilian purpose, and be aimed at the development of a new product, process, or service. A Eurostars project is collaborative, meaning it must involve at least two participants (legal entities) from two different Eurostars participating countries. In addition, the main participant must be a R&D-performing SME from one of these countries.

Eurostars is jointly operated by the EUREKA network and the European Commission and projects are funded through dedicated national funding schemes, which are topped up by the EU.

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e. 4. GALILEO and SESAR

Introduction: Europe's flagship Program for the development of a Global Satellite Navigation System composed of 30 satellites and nearly 50 ground stations all over the world. The program is managed by the European Commission and the European Space Agency.

Israel and China are the only non-European full members in the program. MATIMOP has been nominated to facilitate the Israeli participation in Galileo and is a member in the Galileo Joint Undertaking - visit www.matimop.org.il, www.gsa.europa.eu

SESAR (the Single European Sky ATM Research Programme) is the first European ATM improvement programme, involving the Aviation Players (civil and military, legislators, industry, operators, users, ground and airborne) for defining, committing to, and implementing a pan-European program, and to support the Single European Sky legislation.

MATIMOP facilitates the Israeli participation in SESAR
visit www.matimop.org.il, www.eurocontrol.int/sesar/

e. 5. IRC – Innovation Relay Centers

Introduction: The Israeli Innovation Relay Center (IRC Israel) advises primarily small businesses on technology and innovation. It also helps them identify technology needs, suitable technologies to match these needs, give assistance on exploitation and advise on the EU Research and Technology programs. Each Relay Centre is an independent office backed by funding from the European Union's Innovation Program. Through each center, companies and institutions establish links to many other relay centers located across Europe. The primary goal of all Innovation Relay Centers is to create an exchange of information between organizations across Europe. This gives the organization a direct link to partners and potential buyers of the technologies developed, or potential sellers of the technologies the company may need.

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Activities in Israel

a. Competitive R&D

a. 1. The R&D Fund:

Introduction: The R&D Fund is the main support channel of the OCS, in terms of budget, and it is open to all Israeli registered firms wishing to engage in technological research and development. The proposals are evaluated by experts with final approval being that of the Research Committee, chaired by the Chief Scientist. The annual budget of \$250 million is spent on about 800 projects being undertaken by 500 companies.

Details: Grants are provided as a percentage (up to 50%) of the total approved R&D expenditures. The grants are a 'conditional loan' – in case of a technological and commercial success, it is subject to royalties (3% – 5% of the sales); in case of non-commercialization no repayment is required. The Law stipulates that the royalties received will, in turn, be returned to the R&D Fund - in other words, used to fund future grants to encourage and support industrial R&D.

Criteria: An approved R&D program is one with technological novelty and economic justification, resulting in the development of a new product, or process or a significant improvement to an existing product or process. There is no limitation as to the scientific field of the R&D, proposals are accepted from the entire technological spectrum, such as communications, IT, biotechnology, etc.

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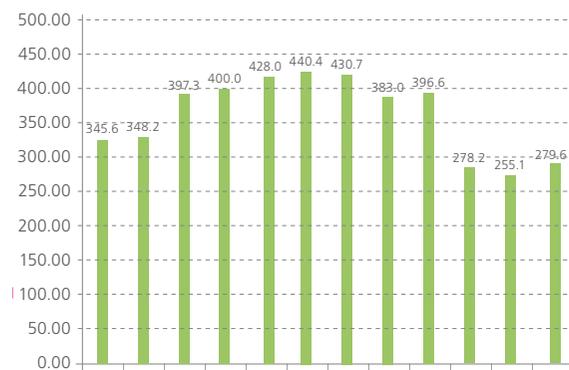
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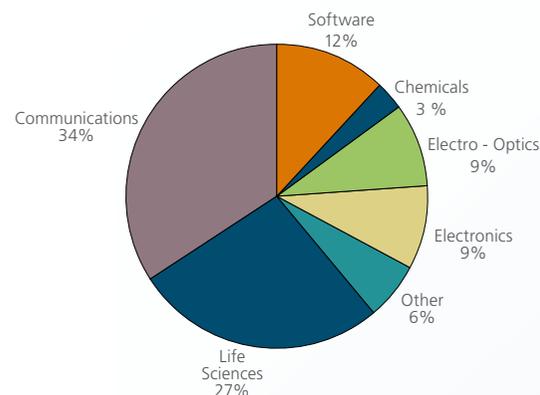
Website: www.moital.gov.il/madan-english

OCS Annual Budget (million \$)



Source: OCS, Ministry of Industry, Trade & Labor, 2007

OCS Grants by Technological Sector, 2006



Source: OCS, Ministry of Industry, Trade & Labor, 2007

OCS - Annual Royalties of Sales, million US \$
(deriving from osc supported projects)



Source: OCS, Ministry of Industry, Trade & Labor, 2007



a. 2. Technological Incubators:

Introduction: The Technological Incubators program was introduced in the beginning of the '90s, in view of the great Aliya from the Soviet Union. Since then, and up until now, the program has been open to all beginning Israeli entrepreneurs. The incubators, with an annual budget of \$30 million, are supportive frameworks that enable novice entrepreneurs, with innovative concepts, to translate those ideas into commercial products and to establish their own company. The incubators support the earliest stages of technological entrepreneurship that are not yet ready for private investors, such as the VC funds, thereby preventing commercially viable technological ideas from going to waste due to lack of resources.

The technological incubators program provides entrepreneurs with the following benefits:

- R&D grant
- R&D infrastructure
- Business guidance
- Administrative assistance
- Logistic support

Status: Currently, there are 24 Technological Incubators in Israel, 15 of them located in peripheral areas, with approximately 200 R&D projects being carried out at any given moment. In 2002, the program initiated a privatization process and since then, many investment groups and VC's (foreign and local) have invested in, and taken ownership over, the incubators.

Details: The R&D grant provides 85% of the approved R&D expenditures (budget of \$350,000 - \$600,000 for two years), with the remainder to be invested by the incubator itself. The grants are, in effect, soft loans to be given back by the incubators, in case of commercial success only.

Results: As of July 2007, the total cumulative private investment in graduate incubator companies surpassed 1.8 Billion Dollars. Moreover, in recent years, incubator projects have successfully been able to raise in round A more than twice the initial investment made by the government, within two years of their admittance into the incubators.

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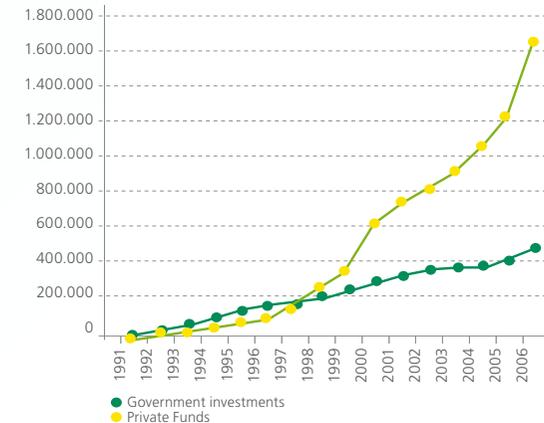
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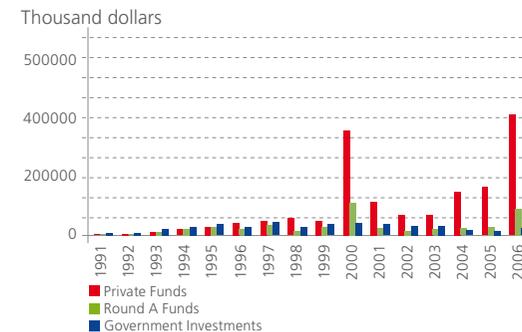
Website: www.incubators.org.il

Government Investments VS.
Private Funds Raised in Incubator Companies



Source: MATIMOP, 2007

Government Investments VS. Private Funds
Raised in Incubator Companies



Source: MATIMOP, 2007

a. 3. Pre-seed Fund – the TNUFA Program:

Introduction: TNUFA encourages and supports technological entrepreneurship and innovation by assisting individual inventors and start-up companies during the pre-seed stage. Support includes assistance in evaluating the concept's technological and economic potential, patent proposal preparation, prototype construction, business plan preparation, establishing contact with the appropriate industry representative, and attracting investors.

Details: Grants are up to 85% of approved expenses are available to a maximum of \$50,000 for each project.

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b. *Generic R&D*

b. 1. The MAGNET Program:

Introduction: The MAGNET program is intended to provide a competitive position for Israel's industry with regard to state-of-the-art technologies of global interest. The new technologies are to be developed in a cooperative venture between the industry and leading academic scientific research institutions in the field, and will provide the basis for new high-tech products and processes.

Criteria: The R&D programs entitled to support from the MAGNET fund must be of a generic nature. Generic pre-competitive technologies refer to a broad spectrum of common technologies, components, materials, design, and manufacturing methods and processes, standards and protocols - which have wide-ranging applications in numerous industries.

Details: The MAGNET program consists of about 12 consortia annually, while each of them is activated for 5 years. A consortium includes several industrial companies and academic institutes. Grants of up to 66% of the approved budget are available with no royalty payments due. MAGNET's annual budget is about \$50 million per year.

b. 2. The MAGNETON Program

The MAGNETON program promotes the technology transfer from academia to industry via the mutual cooperation of individual companies and specific academic research groups. A project period is up to 24 months and budget up to \$800,000. Grants of up to 66% of the approved budget are available with no royalty repayments.

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b. 3. The NOFAR Program

The Nofar program aims to bridge the gap between the basic research and the applied research - a problem that characterizes biotechnology and nanotechnology. A Nofar project has 12-15 months to achieve a project milestone that makes sense to an industrial company which can decide whether to carry on or leave. Grants of up to 90% will be given to biotechnology & nanotechnology projects with the remaining 10% coming from industrial company that is a player in this market. The maximum grant is approximately \$100,000 per project - no royalties are required.

b. 4. Support for Research Institutes

Introduction: This program is designed for research institutions with clear links to industry, to strengthen their technology infrastructure and develop relevant technologies and products for industry. A research institute entitled to support must be an independent legal entity, employ a team of researchers with a proven scientific & technology abilities, have equipment for conducting and testing R&D in industry, and earn 30% of its revenue from industry.

Details: Grants are up to 90% of approved budget and up to two years. At least 10% of the budget must be provided by industry.

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Part 3

Israeli Success Stories

In this part we profiled some innovative Israeli high-tech companies from various areas that have made significant contributions to the world of innovation. We are proud to introduce these four leading companies, two of which have contributed to the medical sector, the third to the communication sector and the last provides sophisticated water solution.





A new paradigm of surgery

ExAblate® 2000 – A Novel Surgical System developed by InSightec Ltd.

Recipient of the European Information Society Technologies Grand Prize for Innovation and Potential to Serve Mankind and Wall St. Journal Technology Innovation Bronze Award and Advanced Imaging's 2005 Solutions of the Year, and Red Herring 100 Europe 2007 Award.

The ExAblate 2000 is the first system to use the breakthrough MRgFUS technology that combines breakthrough technology which combines high intensity focused ultrasound that heats and destroys targeted tissue, non-invasively and Magnetic Resonance Imaging (MRI) which visualizes patient anatomy, and controls the treatment by monitoring the tissue temperature in real time.

ExAblate was approved by the U.S. Food and Drug Administration (FDA) in October 2004 to treat symptomatic uterine fibroids and to date over 3000 women have been treated worldwide for symptomatic uterine fibroids. InSightec has begun clinical trials to study the technology's use in other indications including breast, bone, liver, and brain tumors.



Advantages

Outpatient procedure- saves hospital stay costs, reduces risks of infection

No ionizing radiation

Low or no adverse affects

Quick recovery time – return to normal activity within 1 – 3 days

Improved quality of life without distressing symptoms



About InSightec

InSightec Ltd. is a privately held company owned by Elbit Medical Imaging (EMI), General Electric, MediTech Advisors, LLC and employees. It was founded in 1999 to develop the breakthrough MR guided Focused Ultrasound technology and transform it into the next generation operating room. Headquartered near Haifa, Israel, the company has over 135 employees and has invested more than \$100 million in research, development, and clinical investigations. Its U.S. headquarters are located in Dallas, Texas. For more information, please go to: www.insightec.com

www.insightec.com



Company Overview

Given Imaging is redefining the field of gastrointestinal (GI) diagnosis by developing, producing, and marketing innovative, patient-friendly products for detecting GI disorders. Given Imaging pioneered PillCam capsule endoscopy and today offers a range of PillCam™ video capsules and related products.

The PillCam™ video capsule is a disposable, miniature video camera contained in a capsule that can be easily ingested by the patient. The capsule transmits high quality color images of the GI tract that enable physicians to visualize the small intestine and esophagus. PillCam™ SB, the only ingestible diagnostic tool that allows direct visualization of the entire small bowel, became available in 2001 and has demonstrated superior diagnostic efficacy. PillCam™ ESO was cleared for use in the U.S. in November 2004 and provides a patient-friendly alternative for esophageal imaging. The PillCam™ COLON video capsule for visualization of the colon has been cleared for marketing in the European Union and multi-center clinical trials are underway in Europe and the U.S.

Given Imaging is led by an international management team, with extensive experience in endoscopy, medical technologies and imaging, global marketing and operations, regulatory affairs, and finance. The Company's corporate headquarters, research and development laboratories, and manufacturing facilities are located in Yoqneam, Israel. North American headquarters are located in the USA in Duluth, GA. European headquarters are in Hamburg, Germany. Additional sales and marketing offices are located in Paris, Madrid, Sydney and Tokyo, and a second production facility is located in Ireland. Given Imaging's technology is currently marketed in the United States and 60 other countries.

Given Imaging is publicly listed on The NASDAQ Stock Market (GIVN) and on the Tel Aviv Stock Exchange.

www.givenimaging.com



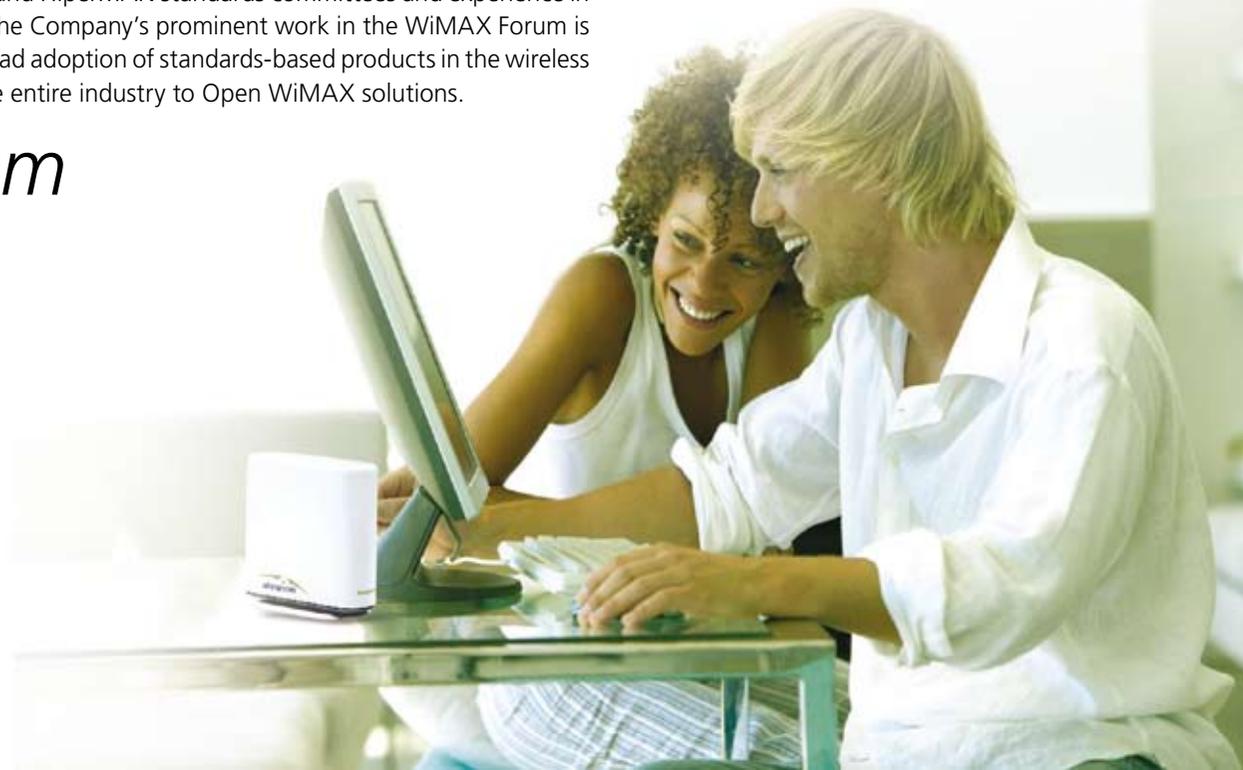


- ® With more than 3 million units deployed in over 150 countries, Alvarion www.alvarion.com is the world's leading provider of innovative wireless broadband network solutions enabling Personal Broadband to improve lifestyles and productivity with portable and mobile data, VoIP, video and other services.
Leading the market with the most widely deployed WiMAX system in the world.

Alvarion is leading the market to Open WiMAX solutions with the most extensive deployments and proven product portfolio in the industry covering the full range of frequency bands with both fixed and mobile solutions. Alvarion's products enable the delivery of personal mobile broadband, business and residential broadband access, corporate VPNs, toll quality telephony, mobile base station feeding, hotspot coverage extension, community interconnection, public safety communications, and mobile voice and data.

As a wireless broadband pioneer, Alvarion has been driving and delivering innovations for over 10 years from core technology developments to creating and promoting industry standards. Leveraging its key roles in the IEEE and HiperMAN standards committees and experience in deploying OFDM-based systems, the Company's prominent work in the WiMAX Forum is focused on increasing the widespread adoption of standards-based products in the wireless broadband market and leading the entire industry to Open WiMAX solutions.

www.alvarion.com





IDE Technologies Ltd. is a pioneer and leader in delivering sophisticated water solutions. IDE develops, designs, installs and maintains environmentally-friendly and economical plants for saline water desalination, industrial streams purification and effluent concentration. IDE's product line also includes a range of heat pumps and ice machines.

IDE is owned in equal shares by Israel Chemical Ltd. (ICL) and the Delek Group, both multi-national multi-discipline companies.

Since its inception in 1965, IDE has installed over 380 plants of various technologies and capacities in nearly 40 countries.

IDE's state-of-the-art installations have gained worldwide reputation in performance, reliability and availability, resulting exceptional low cost product water!

Main Desalination Products

Mechanical Vapor Compression- MVC - These types of plants have a capacity of up to 3,000 m³/day, operating with an electrically driven mechanical compressor, developed and patented by IDE. They have a remarkable record of reliable operation at low electrical consumption. The MVC plants are ideal for the high quality water supply to power stations, refineries, petrochemical industries, ports, municipalities, and tourist resorts.

Multi-Effect Distillation (MED) - Thermal Vapor Compression (TVC) - These highly efficient plants with single unit capacity of up to 25,000 m³/day utilize low-grade heat sources such as low-pressure steam or industrial process streams at 65 C or above. Through cogeneration schemes, MED units can be coupled to power stations or to chemical and industrial plants, recovering their sources of waste heat for the production of desalinated water. MED plants are the optimal solution for supplying substantial quantities of water to industrial complexes, large municipal installations, and power stations.

Reverse Osmosis (RO) Desalination - IDE's RO desalination systems are available for a wide range of capacities and applications, including industrial feed and process water, and potable water production. By supplying the seawater RO plants in Larnaca, Cyprus, Ashkelon and Hadera, Israel, IDE has clearly marked its position as the global leader in desalination.

Industrial Evaporators - These are a special line of brine evaporators, used for concentration of industrial effluents, recovery and recycling of valuable materials, and reduction of effluent disposal problems. These systems utilize a scale-control technique in order to handle environmental and process problems.

Heat Pumps - Heat Pumps, such as the Vacuum Ice Machine (VIM), Ecologically Friendly Vacuum Ice Machines (ECO-VIM) and Chillers (Eco-Chillers), utilize low-level sources of thermal energy for space heating, cooling and thermal energy storage, as well as the production of ice, at substantially reduced energies.

Business Concepts – Water Sale (BOOT) - IDE has also entered into water sale projects (BOOT/BOT scheme), operating large Reverse Osmosis Plants. Under this concept, the developer finances, builds, owns and operates the facility as a private enterprise for an established time period, and for an agreed water fee. At the end of the period, the facility ownership is transferred to the client.

In May 2001, IDE installed and successfully started operating the modern Seawater Reverse Osmosis 54,000 m³/day plant in Larnaca, Cyprus, under a 10 year water sale concept.





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