EDUCATED DECISION-MAKING

SAMUEL NEAMAN INSTITUTE

ANNUAL REPORT 2011

Samuel Neaman Institute
For Advanced Studies in Science and Technology

Technion
Israel Institute of Technology

ABOUT THE SAMUEL NEAMAN INSTITUTE

The Samuel Neaman Institute was established in 1978 in the Technion at Mr. Samuel Neaman's initiative. It is an independent multi-disciplinary national policy research institute. The activity of the institute is focused on issues in science and technology, education, economy and industry, physical infrastructure and social development which determine Israel's national resilience.

Policy research and surveys are executed at the Samuel Neaman Institute and their conclusions and recommendations serve the decision makers at various levels. The policy research is conducted by the faculty and staff of the Technion and scientists from other institutions in Israel and abroad and specialist from the industry.

The research team is chosen according to their professional qualifications and life achievements. In many cases the research is conducted by cooperation with governmental offices and in some cases at the initiative of the Samuel Neaman institute and without direct participation of governmental offices.

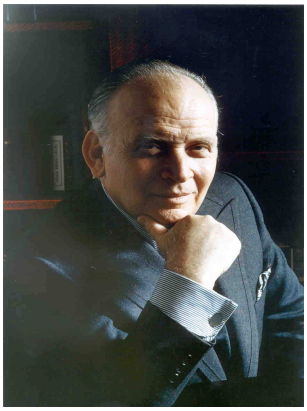
So far, the Samuel Neaman Institute has performed hundreds of exploratory policy research projects and surveys that serve decision makers and professionals in economy and government. In particular the institute plays an important role in outlining Israel's national policies in science, technology and higher education.

Furthermore, the Institute supports national projects, such as the Ministry of Industry, Trade & Labor clusters - the MAGNET program in nano-technologies, media, optics and communication, chemistry, energy, environmental and social projects of national importance. The institute organizes also comprehensive seminars in its leading fields of research.

The Samuel Neaman Institute's various projects and activities can be viewed at the Institute website.

The chairman of Samuel Neaman Institute is professor Zehev Tadmor and the director is professor Moshe Moshe. The institute operates within the framework of a budget funded by Mr. Samuel Neaman in order to incorporate Israel's scientific technological economic and social advancement.

Mailing address: Samuel Neaman Institute, Technion City, Haifa 32000, Israel
Phone: 972-4-8292329
Fax: 972-4-8120273
e-mail: info@neaman.org.il
Website : http://www.neaman.org.il/Neaman/



Founder: Samuel (Sam) Neaman

1913-2002

"I was born in Rosh-Pina in 1913 as the firstborn of my parents, Esther and Pinchas Neaman. My mother was also born in Rosh-Pina and my father was a pioneer who came to Israel with the Second Aliyah. My wanderings began when I was three years old." This is how Samuel (Sam) began his autobiographic story in the book *Israel in and Out*, published by the Ministry of Defense.

The book portrays the life story of Sam Neaman, describing his wanderings from Palestine to Lebanon, Syria, France and back to Israel - to the battlefield of the Second World War in the Middle East and Europe. During the war he served as a commander of one of the units of the British Army, attaining the military rank of major. Upon his release from the army, in Britain, when he asked to return to Israel and join the struggle for establishing the State of Israel, he was ordered by the state leadership to raise funds for the future state and so he went to South America and the United States.

During his wanderings, Sam Neaman never forgot his homeland, to which he felt strongly attached. His love for the land of Israel and the state of Israel motivated him to establish the institute for policy research, the "Samuel Neaman Institute", in the Technion, which would become a non-profit research center, with the goal of

transferring academic knowledge, from the vast store accumulated in the State's academic institutions, to practical routes concerned with delineating a national policy, thus connecting research and the academy with national decision makers.

Samuel Neaman died on November 13, 2002, at the age of 89. To the last, he stayed involved in the Institute's activities, contributing significantly through his ideas and bestowing his vision. He left behind him a life work that continues to breathe and live, and to stimulate Israel's leading researchers and its decision makers.

Chairman

Prof. Zehev Tadmor

This year has been marked by a changing of the guards in the Institute's leadership: Professor Moshe Moshe completes his term of office at the end of June 2012 and Professor Omri Rand of the Faculty of Aeronautical and Space Engineering will be taking over the helm.

We have taken advantage of this interim period to bring together the present and incumbent directors, along with several senior researchers, to formulate the Vision and Mission of the S. Neaman Institute. This turned out to be a fascinating and enlightening process. While the Institute's Founder defined the mission at the time it was established, and the Senate of the Technion specified the scope of its activities, we found great value in re-visiting these basic assumptions. As we tried to condense the vision and mission into a few compact sentences, many questions emerged that generated extensive discussion and clarification. After many hours of productive debate, we articulated the following:

The Vision of the S. Neaman Institute is to promote informed decision-making in Israel through objective research and analysis.

From this vision we derived a mission statement for the Institute, which would have surely met the approval of Mr. Neaman, and which takes full advantage of the vast amount of scientific and technological knowledge on this campus.

The Mission of the S. Neaman Institute is to serve as a leading research institution focusing on national issues related to science, technology, economics and social policies. The Institute applies advanced research approaches to identify, formulate and analyze policy in the fields of science and technology, industry, higher education, physical infrastructure, environmental issues, and energy, among others. Its findings form the basis for informed public debate and responsible decision-making and implementation across the government and private sectors.

The four years during which Professor Moshe served as Director of the Neaman Institute were intense, exciting and highly productive. Immediately upon taking office in 2008, he had to contend with the impact of the great financial crisis of that year. Facing major cutbacks in the funding of the Institute, Prof. Moshe launched a major restructuring plan, reducing staff and cutting expenses. He introduced administrative and financial regulations to streamline operations, and at the same time, charted a new academic roadmap for the Institute. Not only did he successfully navigate the Institute through a major crisis, and instill within it a new institutional culture, but he also oversaw important achievements within the Institute which will leave a lasting mark. I wish to thank Professor Moshe for his seminal contributions.

I would also like to take this opportunity to welcome Professor Omri Rand, and wish him success in his new position. I am confident that he will lead the Institute along the lines established in our vision and mission, actively pursuing its role as an essential authority in the national policy scene.

Professor Zehev Tadmor
The Chairman of the Samuel Neaman Institute

Director

Prof. Moshe Moshe

This year's Annual Report appears while the Samuel Neaman Institute is fully engaged in a very wide range of interesting national policy research activities. It is also my fourth and last Annual Report. Starting July 2012, I shall be on my sabbatical leave from the Technion and Prof. Omri Rand will become the new director of the institute in the coming years.

Samuel Neaman Institute researchers have published during last year important research results on national policy issues, reflecting the variety of work carried out in our institute. Our researchers appeared as invited lecturers, panel chairs and panel members at important and influential meetings and workshops. They addressed government officials, the general public, the media as well as decision makers at different levels of the government.

A new Center for Industrial Excellence was established this year at the Samuel Neaman Institute. The center is dedicated to help in achieving national goals by spearheading and promoting policies that lead to industrial excellence in our country, offering economic opportunities to all segments of the Israeli society. The center will focus on identifying opportunities offered by specific technologies and industries, while pinpointing the obstacles to healthy growth. The center will formulate national industrial policies using input from experts from the academy, industry and government.

The “umbrella project” at SNI in recent years is derived from the influential report “Israel 2028 - Vision and Strategy for Economy and Society in a Global World”. Major parts of this reports were chaired and written in the past by SNI researchers. This report and its wide variety of implications became recently one of the main topics in our institute's activity. Our efforts were directed towards implementation of the conclusions and the recommendations of this report. We conducted meetings, workshops and published reports on the implementation of national policies. Our umbrella project combines the following ongoing programs at the institute : Policy studies and recommendations on the integration of the Ultra-Orthodox sector in Israel’s economy, Policy research on planning Israel’s national infrastructures, program on innovative policy for the hi-tech sector and leveraging academic and industrial experience for creating new knowledge–intensive industries, studies on upgrading and strengthening the classical industries. This part of the program is highly significant also for reducing socio-economic gaps in Israel’s society since it addresses one of the major problems of the Israeli industry, that is, its binary structure (a successful hi-tech industry on the one hand, and on the other hand a traditional industry). Evidently, this problem has clear implications on the socio-economic situation in different sectors of the Israeli society. The different components of the “umbrella project” are not disjointed. They communicate and enrich each other forming together a solid and useful activity at our institute.

The central core of SNI activity on science and technology policies continued this year at full speed and volume under comprehensive large contracts and collaborations with government ministries. Significant contributions are made towards the establishment of a systematic and informed process of merging a national policy for research, technology and innovation. This work is updated occasionally, and the data base is compared internationally, at time periods of decades and more. The main subjects of activity include national expenditure on civil research and development, human capital and output in science and technology. The third edition of a series of publications on indices for science and technology in Israel includes an update of key indices on the subjects of inputs and outputs in science, technology and innovations, as well as new subjects, such as government assistance to research and development and globalization issues. In particular, the continuation of contracts as well as new contracts with the

Ministry of Science and Technology and proficiency derived from these contracts have further established our institute in recent years as the leading Israeli Think Tank on issues of Science and Technology and Higher Education national policies. The analyses on national programs encouraging research and development as well as the surveys of Israel's research infrastructures, research outputs and citations of scientific publications and patents completed this year, will assist decision makers and emphasize the unique contribution of our institute to issues of high national importance.

An ongoing work, financed by a highly competitive EU 7th framework program, is yet another important activity, already recognized as successful by our EU partners. The Samuel Neaman Institute's research group won a wide scope contract together with a group of institutions from European countries. The goal of this study is to examine the role played by the demand side in creating technological knowledge. Our researchers are involved in major parts of the project, and a new methodology mapping innovation systems in each country has been developed and completed as part of this project, adapted this year by our partners.

Continued activity is carried out by our Water Forum. The program has been launched in cooperation with both the Grand Water Research Institute at the Technion and the Water Authority. Summaries of the first and second workshops are now being published in an SNI preprint format. Water issues are of supreme national importance in our country and the Neaman Institute will contribute its capabilities and skills to the national effort.

The research work carried out by our energy and environment team has quite a significant influence on decision makers in the State of Israel. Members of our team served as professional advisors to the Ministry of Environmental Protection developing a national plan for greenhouse gas mitigation. This document, the seventh in number, is a continuation of our team’s contribution to an important national policy document. Another project that was designed and completed at our institute in collaboration with the Ministry of Environmental Protection is the registration and reporting program of greenhouse gas emission. The steering committee comprised also

many stakeholders, including government officials, industry representatives, public transportation companies, local authorities and NGOs.

Our environmental team has added their significant contribution to the establishment of the Israeli Climate Change Information Center that was recently founded in collaboration with Haifa and Tel-Aviv Universities as well as the Technion. This project was initiated by the Ministry of Environmental Protection in order to create an information and knowledge center. The Center will serve as a regional and international hub, for sharing information and accumulated knowledge.

Following our plan for implementation of the recommendations of the vision and strategy work "Israel- 2028", mentioned above, a program aimed at accelerating the integration of the ultra-orthodox population (the Haredim) into the Israeli economy had been established at the Samuel Neaman Institute more than two years ago. It turned out to be a successful one. The program is supplying a lot of useful, needed information, as well as clear understanding of the issues and the recommendations involved. The program team is well appreciated and on demand by Knesset and government officials who deal with this issue. The Tal law and its alternatives are discussed these days in public. The work of SNI's team is therefore most important in creating a solid basis for reaching educated and informed decisions on this important national policy. The project incorporates research and applications on military and civic services, academic studies and formal employment for the ultra-orthodox population.

Workshops and conferences organized by the Neaman Institute stimulate the interest of professionals as well as the general public. I will mention now just a few of the meetings held this year at SNI: The first and the second meetings addressing the issue of centralization in the Israeli economy, which was widely debated by the press. Our institute raised this issue at the time when very few appreciated, recognized and understood the severity of the centralization problem in the Israeli economy. These days the issue is a central debatable topic in the Israeli public and the Knesset committees. The meetings of both the Energy Forum and the Higher Education Forum were attended by many professionals and experts. The interesting workshops, as part

of the BioNorth Project and the above mentioned meeting of our new Water Forum, were held with the participation of senior researchers and decision makers.

The Neaman Institute is responsible also for the information centers of projects as part of the MAGNET Consortia. We received encouraging comments as to the important role of SNI for running of research and development within these consortia as well as providing good quality service.

Finally I would like to thank my dedicated colleagues at the Samuel Neaman Institute for several good and satisfying years of collaboration, helping me in running the highly significant Think Tank at SNI. I would like to thank our staff, our senior researchers and Prof. Zehev Tadmor for four very interesting years. I wish Prof. Omri Rand, the new director of the institute, years of productive and successful progress at SNI, promoting further the vision and mission of our institute.

Prof. Moshe Moshe
Director of the Samuel Neaman Institute

Research Activity at the Samuel Neaman Institute

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A. Implementation Program of Israel 2028 - Vision and Strategy - a Framework Program at the Samuel Neaman Institute

Continuing the efforts to actually implement the program "Israel 2028 – Socio Economic Vision and Strategy in Global World", the Samuel Neaman Institute initiated several projects designated to prepare a multi-annual implementation programs, in collaboration with government agencies.

In order to market and promote the execution of the program, efforts have been made to find partners in the Government that will be willing to adopt the implementation program and share the funding. In 2011 the following activities have taken place at the Neaman Institute:

- Policy studies and recommendations on the integration of the Ultra-Orthodox sector in the Israel economy (see chapter E)
- Introduction of a policy for building infrastructures that will enable the achievements of Israel 2028 objectives.
- Innovative policy for the hi-tech sector
- Leveraging academic and industrial knowhow for creating new knowledge – intensive industries,
- Upgrading and strengthening of the classical industries, addressing two fundamental problems presented in the Israel 2028 Vision:
  a. Creating an innovative and competitive global classical industry,
  b. Reducing the gap between the hi-tech and the classical industry sectors, thus reducing the phenomenon of two parallel economies, the "dual economy".
- In 2011 the research project initiated by the US Israel Science and Technology Foundation (USISTF) and the Chief Scientist "Innovation 2011 –an Active Industrial Policy for Leveraging Science and Technology and Israel's unique culture of innovation" was concluded and summarized.

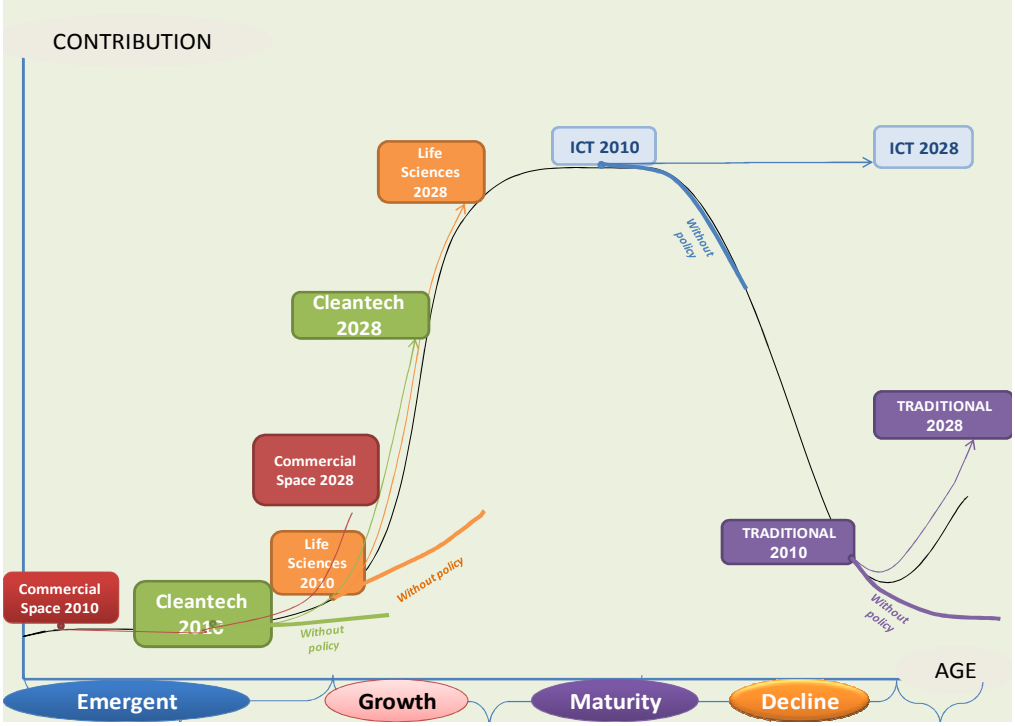
Head of the project on implementation of Israel 2028 Vision: **Dr. Gilead Fortuna**

Innovation 2011 – Active Industrial Policy for leveraging Science and Technology and Israel's Unique Culture of Innovation.

The program commenced at the end of 2009 and ended in 2011. The project was initiated by the U.S.-Israel Science and Technology Foundation, was authorized by the Minister of Industry, Trade and Labor and led by the Chief Scientist of the Ministry.
Innovation 2011 is a strategy for implementing the mission outlined in **"Israel 2028 – Vision and Strategy for Economy and Society in a Global World,"** initiated by the U.S.-Israel Science & Technology Foundation and presented to the Government of Israel. This program is a detailed plan of action to implement recommendations made by **Israel 2028** for an industrial innovation policy, specifically related to three out of the ten Israel 2028's key topics: 1) upgrading the traditional industries; 2) leveraging existing emerging technology sectors into global knowledge-intensive industries; and 3) sustaining and strengthening the current hi-tech industry in Israel today. The overall goal of the project is to propose a proactive national industrial innovation policy that leverages the advantages of Israel's science and technology alongside Israel's unique culture of innovation and entrepreneurship.

The sectors studied and their objectives are shown in the figure below, which describes schematically the qualitative contribution of the industrial sectors selected for this study on an S curve of industrial life cycle. These specific segments were selected due to their large business potential and Israel’s relative advantages in each.

Industry life cycle & contribution to national economy



Project teams analyzed Israel's relative strengths and advantages, identified barriers to industrial growth, sector-by-sector, and offered pro-active recommendations to achieve industrial success and sustainability. Today, Israel faces a completely new global situation that poses significant challenges to the continued global competitiveness of Israel's knowledge-intensive economy. These challenges cannot be remedied by quick, simple short-term solutions, but rather require the application of wide-ranging, flexible, comprehensive and visionary national industrial policy.

Publication of the summary report and the project team reports will be done by the USISTF in coordination with Dr. Gilead Fortuna, the program leader. The heads of the projects teams were **Giora Shalgi,** former CEO of RAFAEL Advanced Defense Systems Ltd., **Elad Shaviv**, from Cisco, **Dr. Ora Dar** head of life sciences office of the Chief Scientist, **Dr. Ruth Alon**, head of ILSI, **Professor Shlomo Maital**, Senior Research Fellow at SNI, **Professor Lt. General (Res) Itzhak Ben Israel**, Tel-Aviv University and the head of National Council for R&D, The Yuval Ne'eman workshop, Tel Aviv University, and **Dr. Deganit Paikovsky**.

Program Leader: **Dr. Gilead Fortuna**

Center for Industrial Excellence

The Samuel Neaman Institute has established a new **Center for Industrial Excellence (CIE),** which is dedicated solely to promoting *industrial policies*. Specifically, the CIE intends to help achieve the national goals outlined above by spearheading and promoting policies that lead to industrial excellence in Israel within a global context, while offering economic opportunities to all segments of Israeli society. This effort will be based on rigorous studies of the lessons recent economic history teaches us about the key role of industrial excellence.

The CIE will focus on identifying opportunities offered by specific technologies and industries in the context of global business trends, while pinpointing the obstacles to healthy growth. With input from representatives from government, industry and the academia, the CIE will formulate industrial policies that:

1. Balance between hi-tech, traditional, mature and new, emerging industries, while narrowing economic inequality and enhancing equal opportunities in the Israeli employment market.
2. Leverage technological innovation in promising fields, including, for example:
    - Nanotechnology-related research
    - Biotechnology and life sciences
    - Cleantech and related fields
    - Commercial, civil space technologies
    - Local, natural gas-based organic and petrochemical industries.
3. Preserve and increase the presence of multinational companies in Israel (for both R&D and *as well as* manufacturing).
4. Encourage the forming of large new industries, balancing the present trend of early 'exits'.
5. Develop strategies to promote and manage collaborations and export with Far Eastern countries (India and China in particular) and emerging markets, while retaining locally developed intellectual property.
6. Increase effective cooperation between industry and the academia.

7. Develop suitable indicators for measuring success.

Preparing the Policy Foundations - CIE Startup projects:

- Mapping the Israeli industrial and service landscape.
- Identifying those segments that are suitable for targeted intervention, and bringing them to the attention of policy makers.
- Benchmarking Israeli industries versus similar segments in developed countries.
- Developing collaborative programs with other entities with similar goals in Israel and abroad.
- Adopting proven methods of industrial excellence**:** The Standards Institute of Israel is in the final stages of reaching an agreement with the EFQM Office in Brussels that will allow Israeli industries to participate in a world class forum dedicated to promoting sustainable industrial excellence. The CIE is actively supporting this initiative.

A *Steering Committee* is currently being formed

Program Leader: **Dr. Gilead Fortuna**
With support of**: Giora Shalgi and Professor Shlomo Maital**

Challenges for the Global Industries in Effective Water Use and Applications

Newtech, Israel Export Institute and the Samuel Neaman Institute joined to work together to increase the competitiveness of the Israeli water industry worldwide. The project aims to map water-intensive industrial sectors with the purpose of identifying the needs for innovative technological developments, in order to enable those sectors to become more cost efficient and able to survive and grow.

The research project began in late July 2011, led by Dr. Gilead Fortuna, and based on extensive experience in the Israeli industry, with senior positions in the past and being one of the entrepreneurs behind Aquise, the successful water purification company. Assisting in management of the project is Shiri Freund-Koren.

We looked at the global industries that are water intensive and where the barriers to their growth can be removed by applying innovative solution of water technologies. As an example, in the oil industry or gas production today, the need for the big amount of water inhibits the production of oil or gas from large potential new sites. Also in existing wells, deeper explorations require more water and it has become more expensive to produce the oil or gas from those sources when one of the main reasons for the high cost is the huge amount of water required for the process and the environmental care they require.

The study defines seven industrial sectors that require high-water and water efficiency through innovative technologies:

1) Gas and Oil
2) Mines
3) The pharmaceutical industry
4) Heavy metal processing
5) the semiconductor industry

6) Food Industry
7) Tourism industry (hotels, swimming pools, spas…).

The project aims to deepen the understanding of each industrial sector, and identify and map the different industry's needs, suggest market-focused solutions to Israel's water industries that will have a worldwide demand.

To strengthen the academic research activities, The Neaman institutes works also in cooperation with Prof. Rafi Semiat, a water expert from the Technion.

The first two chapters of the project, on industry oil and gas production and mining industry, were presented to the who's who of Israel's water industry conference held at the Institute of Export on February 7 2012, entitled: "the challenges of water in industry - leverage your technology". The conference was designed to create an open dialogue with the Israeli water companies and get their feedback and guidance to ensure that the study will really create a high business potential.

The research activities were already translated to efforts to implement the original understandings, and thus have begun Newtech and Export Institute forge connections with the mining industries in need. This Includes for example sending a delegation of Israeli water companies to Chile, which has a large mining industry, which badly needs innovative technological solutions.

In addition, the three bodies, Newtech, SNI and the export Institute are working to identify local partners in the different target countries, to facilitate the penetration of water companies in industries that have been mapped. In each sector we recruited a consultant with practical experience.
This research project main purpose is enhancing the Israel industry business and we have implemented it as part of our Center for Industrial Excellence policy applications.

Project Leader: **Dr. Gilead Fortuna**
Research assistant and project coordinator: **Shiri Freund Koren**

Upgrading Traditional Industries

In 2011 we began implementing our recommendations for upgrading the classical (traditional) industry according to the report of our committee for the empowerment of the classical industry, from April 2011. The program of this works follows closely the recommendations of the committee.

Under this framework, we concentrate on number of actions initiated by us and we join forces with many outside participants with the ability to execute and influence the decision makers.

For this assignment we recruited Dr. Giora Shalgi who headed the team of classical industries in the "Innovation 2011". The following projects are part of the actions that are used to strengthen and empower the classical industries in Israel:

1. Establishment of industrial parks cluster in the Galilee, which supports the small and medium classical local industries.
The perception of the clusters serves as a central axis for the integration of many other businesses and collaborators with the purpose and the potential of contribution to the classical industries.

2. The program for excellence and innovation in the Galilee, mainly aimed for small classic industries, was adopted and now is supported by the Ministry of Development of the Negev and the Galilee.

3. The government new Agency's program for supporting and consulting for small and medium enterprises was launched with our encouragement and our assistance, in consistent with the perception of the Innovation 2011 recommendations for classical industry committee's report recommendations.

4. Israel's National Standards Institute has completed an initiative for agreement with the management team of the European EFQM and initiated a training course that authorized the participants to train professionals in the field of organizational excellence in the industry.

6. Establishing a group of "Role Model Organizations" was initiated and so far 25 organizations joined to form the minimum "critical mass" that would constitute an industrial excellence influence. This forum will be later encouraged to initiate other supporting actions for industrial excellence beyond the current empowerment of the classical small industries.

7. There is good cooperation with the leading Technion Innovation Centre Executive Forum. A joint program was created and implemented named "MOVING UP", implemented in collaboration with our Samuel Neaman Institute team. We initiated this program as a concept of training traditional industries in the form of what was done by TIM (Technion Institute for Management). Professor Shlomo Maital gave professional lectures and Giora Shalgi and Dr. Gilead Fortuna participated in training and mentoring of industry's innovation projects as part of the program. We plan to expand these courses in 2012 and within the next few years to many more small industries.

8. There is agreement and approval of the Ministry of Education, to establish an advanced technology education center in Haifa with the Technion academic support.

9. Initiatives of Prof. Mia Erez and Prof. Uri Marchaim to create clusters of cooperation between the Israel north industrial plants is now also supported by partnerships with European agencies.

10. A good cooperation was achieved with the Manufacturers Association, including the mobilization of Mr. Oded Tira who is ready personally to help to advance our goals in empowering the classical industries.

11. OECD project "Cleantech Industry in the Negev" aimed to leverage the Negev industrial growth:
At the request of the Ministry of Commerce & Industry Department to the Galilee and Negev Dr. Gilead Fortuna helped to prepare materials of background for a study of OECD to promote Cleantech industry in the Negev as part of expanding the manufacturing industry in the Negev. The report on policy Cleantech prepared in the "Innovation 2011" program was used as a background to initiate the study and we participated in preparing the material, meetings with the OECD. We are currently helping evaluating the initial report submitted by OECD staff and in the discussions on how to actually implement it.
In 2012 further work is planned together with the Ministry of Trade and Industry on industrial upgrading of the classical Cleantech industry, thus providing solutions to environmental challenges and growing the classical industry.
The project is being coordinated with few government agencies, including the Small Business Agency at the Ministry of Trade and Industry, Ministry of Development of Negev and Galilee.

Planning of Activities for 2012:

a. Strengthening the northern industrial parks cluster which will serve in the future as a pilot model for the national level
b. Support the creation of a brand "classic industries Misgav Conference" held annually in a variety of topics relevant (second conference scheduled for June 2012)
c. Strengthening the coordination and support to the Ministry of Industry Consulting program to the classical industry.

d. Support and participate in the professional clusters assistance activities of Mia, Erez and Mr. Uri Mar Haim. Apply our Water applications project to the current water cluster.
e. Help establish a center for technological education (Giora Shalgi is already a team member of the working group)
f. Implementing the EFQM method in industry (Giora Shalgi was asked by the Standards Institute chief executive to lead the program)
g. Expansion of program excellence and innovation in the Galilee (Giora Shalgi public committee member of the program).
h. Strengthening the integration of "role model organizations" in the support of classical industries (there is now a program of excellence in Galilee with the intention to expand the number of participants)

Project Leader: **Giora Shalgi**

With Support of **Prof. Shlomo Maital** and **Dr. Gilead Fortuna**

National Policy in Business and in Science Cooperation with East Asian Countries

Within the national policy framework to expand cooperation with the East, an issue that was discussed in the past has been raised again in practical terms, namely the collaboration between Israeli industry and leading industries in China and India. Two large Israeli companies were recently acquired by leading companies of China and India; the company "Makhteshim Agan" was acquired by Chem China and the company "Taro" were acquired by Sun Pharma, a well-known Indian company.
On the one hand we should view positively the opportunity of such acquisitions, which allows the flow of capital to companies and the opening of Asian markets for the Israeli companies more effectively, while preserving, at least the first stage, the full employment in these industries.
On the other hand the fear of potential loss of control of scientific knowledge and of vital marketing and sales has strengthen and may later ultimately lead to a loss of assets to the acquired companies and consequently reduce potential openings for employment.

At this point we prepared a research proposal to study in depth the implications of purchasing of Israeli companies by Indian and Chinese industries in order to draw practical suggestions for the proper national policy. Dr. Iris Shafir made an offer which relates to the Indian industry and Yoni Glickman made a proposal which relates to the Chinese industry. In these proposals we plan to engage the Chinese and Indian perspective on the one hand and Israeli interests, business and global considerations of constitutional considerations on the other hand and try to offer a coherent national policy on the subject.

The intention is that the work will be done in cooperation with the Ministry of Trade and Industry, the Department of Invest In Israel. We are currently discussing the

options and submitting proposals for their consideration.

During 2011 Dr. Gilead Fortuna lectured in the MBA course at the University of Haifa on business policy in China, in cooperation with a guest lecturer from the University of Fudan from China.

In April 2011 we hosted at Neaman Institute a full day visit of Professor Brahmachari, CEO of the Ministry of Science and Director of Indian government research institutes. At the end of the meeting we agreed on strengthening cooperation and exchange of researchers on innovation.

Project Leader: **Dr. Gilead Fortuna**
Potential partners in 2012 Dr. **Iris Shafir and Yoni Glickman**

National Policy for the Chemical Industry

During 2011 we held a series of meetings with experts in the field of natural gas, and we focused on the capabilities and feasibility of establishing a new chemical industry that produces polymers and many other products by leveraging the natural gas as raw material.

Dr. Fortuna gave the invited lecture at the conference of "The Israeli Association of Chemical Engineering" and initiated discussions with the Ministry of Trade and Industry and labor.

Dr. Fortuna presented the options in a joint government – industry meeting, summoned by the Director General, Ministry of Trade and Industry and labor on the feasibility issues for such a huge national project. Attending that meeting were the chief scientists of the various ministries and the senior representatives from Ministry of Interior, Ministry of Finance, Ministry of Environmental Protection, Infrastructure Ministry and department's heads at the Ministry of Trade and Industry. The meeting

was dedicated to the presentation of the subject by us and a discussion. Our suggestion received great support in this discussion and it was decided to examine this issue in depth. We hope to do the deeper study in 2012, as the service for the Ministry of Trade, Industry and Labor.

This topic seems most vital for Israel in 2012 as part of the policy to strengthen the national chemical industry, whose contribution remains high and is compatible with the most positive scenario of the scenarios presented in our original policy study in 2006 for the Chemical Industry;

We intend to add more people to this project with broad industrial experience in the chemical industry; among them are Ami Alexandria (Engineering) and Yuval Neev (economics).

The characteristics of Gas Based Industries require long range planning:

1. Very high infrastructure investments.

2. In order to achieve return on the investment, the investments need full implementation. Alternative options must evaluated and compared.

3. Gas exports require piping infrastructure or investments in liquefaction systems.

4. Tight gas prices and oil simultaneously fluctuate. It is important to evaluate which will win in the long run.

5. Gas use for electricity is rising steadily as it contributes to reduced pollution.

6. The use of gas to the chemical industry will be attractive as the cost of the gas industry will be tailored to the long - term policy agreed upon.

7. High taxation allows the implementation of gas prices policy for the new chemical industries.

8. Implementation allows industrial promotion and population increase in the Negev industrial areas.

9. The program is compatible and supports the policy for decreasing the dependence on oil through the intermediate production.

Implementation work plan is due and it will include:

1. Systematic learning the experience of other countries that have already realized industrial production based on raw natural gas.

2. Trends forecasting and sensitivity of demands and further production in the investing stages.

3. Economic analyzes based on different scenarios that incorporate assumptions of gas costs, investments and world prices.

4. Chemical analysis of already existing innovation and academic integration options with industry to develop chemistry of the downstream (e.g. heterogeneous catalysis)

5. Combining industry-leading forum, entrepreneurial industries, experts from academia, energy market experts, government representatives (Regulation and Business Development) and the Capital Market

6. Combination of push initiatives from bottom up with ascertaining top down policy.

7. Effective implementation is possible only with coordinating all of these bodies under a long range policy.

Project Leader: **Dr. Gilead Fortuna**

Support: **Reuven Wax**.

Green Aviation – Literature Review

The Civil Aviation Authority of the Ministry of Transport has approached the Samuel Neaman Institute to conduct a literature review of the subject of "Green Aviation".
The objectives of the study:

- To identify the relevant and related issues, discussed and researched internationally.
- Following the analysis of the subject, to highlight the most relevant issues to of Israel.

In the first phase of the study, a wide spread screen of publications, documentation and research papers was conducted. As an outcome a least of 14 topics were selected.
In light of the wide range of topics, it was decided together with the representative of the Civil Aviation Authority to concentrate on topics which are most relevant to Israel:

- "Green Aviation" policies in selected International group of countries and organizations (USA, EU and ICAO).
- "Green Airports" – planning, development, operation, management and maintenance of airports and their environmental policies in selected airports in North America, Europe and the Far East. The focus of the search was on 3 main subjects: A. Policy and regulations; B. Environment (air, soil and water); C. Selected case study airports (including the issues of noise, energy, maintenance, waist etc.
- Selected topics related to Israel such as "birds and hazardous conditions to airports and aviation" and "co-ordination of civil and military aviation on environmental issues.

Each one of the above issues was illustrated by exerts and summaries of documents and articles and an extended bibliography which allows familiarity with the material.

The research Team: **Prof. Yehuda Hayuth** (Team Leader), **Orly Natan** and **Ortal Faibushenko.** Advisor: **Prof. Ofira Ayalon**

Introducing "Cold Ironing" into Israeli Ports

The Israel Port Authority at the Transportation Ministry has signed an agreement with the Samuel Neaman Institute to conduct a study that is intended to reduce air pollution and improve the quality of the environment in which the port operates. The term "Cold Ironing" expresses an attempt to limit the amount of carbon emission caused in the port due to the operation of generators on anchored ships and to replace them with an external source of energy on the dock. This is a relatively new process, which is being experimentally implemented in a small number of ports around the world, and only a few new ships are currently equipped to accommodate an external power source for the ship.

It is assumed that the air pollution caused in the port and its region will be reduced if the power produced by ships' generators is replaced by electricity produced at the power station at a site that is distant from the port. The energy utility of the power station is more efficient than that of the generators operated by the ship, and also it is easier to control the emission of gases from one or two chimneys in a power station than from dozens of generators operated by ships in the port.

The study examines the four following subjects:

A. A review of global trends in this area, presenting several examples that are already operative in ports around the world.

B. The economic costs involved in installing and maintenance of the facility in the port and the costs to the ship owner.

C. The environmental aspects of the relatively new method in comparison with the continued existing state and the international charters on the subject.

D. The operational aspects of the system for the port and ship, including the scope of the required electricity supply to operate such a system.

E. Presentation of "Test Cases" of ports which already operating shore power supply to vessels in ports. Most of the cases concentrate on Cruise Vessels which consume a lot of energy and some cases deals with container vessels.

The study is being conducted by **Prof. Yehuda Hayuth,** in collaboration with counseling team from the Shipping and Ports Administration of the Ministry of Transport, headed by **Dr. Dan Livne**.

A Strategy for National Infrastructure in Israel for 2048

Planning infrastructures for the long run is highly important in Israel for at least three major reasons: The limited physical area of Israel, the continued demographic growth at a relatively fast pace and the long time required for planning, approving, financing and executing infrastructure projects.
A major goal of this research is to keep open options for the long term planning and implementations, preventing obstacles that will hinder the establishment of strategic facilities and networks, and to coordinate optimal exploitation of the limited area of our country.

The project concentrates on evaluating future demands for physical infrastructures in Israel and on its ability to establish adequate and sustainable infrastructure systems that will meet the expected demand. Another emphasis in this project is the examination of the interaction between various infrastructure components and between them and the relevant economic, social and environmental systems.

Strategic planning of infrastructure development is vital because the implementation takes a long time. Yet, to ensure the attainment of the goals defined for the long term, some major elements should be adopted from the recommendations and these must already be implemented in the immediate and short term.

During this year, because of more extensive occupation with shorter term infrastructure studies, mainly related to aviation and maritime, the long term strategic perspective of the subject was small.

The project Team: **Prof. Yehuda Hayuth** (Team Leader), **Prof. Doron Balasha** and **Eng. Gideon Hashimshoni.**

Planning for Activities for 2012

1. Cold Ironing (completion)

In light of the growing international interest in the Cold Ironing concept, there are plans to develop Cold Ironing facilities in the next terminals which will be constructed at the ports of Haifa and Ashdod. During the first part of 2012, further analysis of the economic, operation and environmental issues will take place.

2. HNS Convention

Upon the request of of the Ministry of Transport to investigate the implications of the State of Israel to join the convention, a proposal is currently being prepared. HNS Convention is the International Convention on Liability and Compensation for damage in connection with the carriage of hazardus and Noxious substance by sea.

3. Strategy for National Infrastructure in Israel 2048

This is an on-going subject which received a special focus on a yearly basis. As part of "Israel 2028" project, the subject was primarily concentrated on economic mid-range strategy. It is the intention in the year 2012 to expand the horizons to a long term perspective and to examine new subjects such as greater internal integration between the components of physical infrastructure and the viability of planning artificial island to relieve congestion of industry and residential.

Technion's Contribution to Israel and to the Development of Technology in the World, through it's Graduates

This project documents the contribution of Technion faculty and graduates, to Israel and to humanity. It includes a Web-based survey of Technion graduates, to which over 4,000 alumni/ae responded. The results of the survey were analyzed and processed; we extrapolated the data to represent the population of all Technion graduates since the Technion was founded. The results indicate the very large weight of Technion grads in the economy and their contribution to innovation in Israel.

The extent of Technion faculty in high-tech industry is estimated at some 13,000 persons. They represent three-fourths of Technion graduates, and 14 per cent of all employees, in these industries. About a fourth of the graduates serve in senior management positions (CEO, VP), in the companies in which they work. Technion graduates make a unique and valuable contribution in the inception and development of startups in Israel. Some 18 per cent of graduates work, or once worked, in startups, a proportion that is three times the average proportion in the economy, which itself is higher than in most Western nations.

The value of the human capital created by Technion, since it was founded, based on our survey data, is estimated at a minimum of $35 b. The net present value of the addition to GDP, accruing to the 2010 Technion graduating class of 2,100 engineers and scientists, over their working lifetime, is estimated at between $1.76 b. and $2.97 b. This represents the net present value of the additional GDP productivity arising from the Technion studies of its graduates. Since the estimated cost of educating a graduating class of Technion engineers and scientists is about $1 b., the social rate of return on this investment is between 76 per cent and 197 per cent. These very high rates of return are confirmed by the results of similar studies done in other countries, on the return to investment in higher education.

A research report detailing the findings will be published as an S. Neaman Working Paper, in English and in Hebrew. In addition, a popular book, Technion Nation, meant for ordinary readers, is now being prepared and a first draft has been completed. The book will be published in English, and eventually in Hebrew, and includes gripping stories of Technion inventions, breakthroughs, startups and contributions. It will be

published as part of the 100th anniversary celebrations, marking a century from the 1912 cornerstone laying for the original Technion building in Hadar.
Data from this research project were recently used in the proposal presented by Cornell and Technion, for establishment of NYCTech, a science and engineering campus in Manhattan. This proposal was chosen over other proposals by Mayor Michael Bloomberg and his team, and implementation has already begun.

The project leaders are: **Prof. Amnon Frenkel** and **Prof. Shlomo Maital**

We acknowledge the assistance of **Eran Leck, Vered Segal, Tsipy Buchnik, Bella Zalmanovich and Golan Tamir,** in this research.

Moving Up Project

Prof. Shlomo Maital together with Prof. Miriam Erez and Dr. Iris Arbel (IE&M Knowledge & Innovation Center), initiated and designed a series of six workshops for companies in traditional industries (plastics, etc.), largely from the kibbutz industries. Seven companies were enrolled: Tadbik, Huliot, Chromagen, Egmo, Avgol, Tama, and Maytronix. The goal of the program was to upgrade the companies' management expertise and help them compete in global markets. Each workshop featured a different topic or tool. Experienced business mentors were sent to each company, who helped design and implement a bottom-line project. The second iteration of Moving Up is now underway.

B. Higher Education Policy

The Higher Education Forum

The Samuel Neaman Institute, in collaboration with “Bashaar” - Academic Community for Israeli Society, and the Fulbright Foundation, organizes the higher education forum. The higher education forum was established following an international conference held in December 2004 at the Neaman Institute on the subject of "Transition to Mass Higher Education Systems." The goal of the forum is to hold discussions on issues that concern the higher education system in Israel and to hold an open dialogue between the universities, colleges, Israel Council for Higher Education, Planning and Budgeting Committee, and other government and public organizations. The forum is managed by Prof. Moshe Moshe, the director of the Samuel Neaman Institute, Prof. Mordechai Schechter from Haifa University, representing "Bashaar", and Dr. Neil Sherman, the CEO of the United States – Israel Educational Foundation. The following three meetings took place in 2011 (the meetings were videotaped and recorded and can be watched at the Samuel Neaman Institute website, www.neaman.org.il).

The meetings of the Higher Education Forum:

Higher Education Forum No. 18 – 7.1.2011

Meeting on the subject: **"Integration of the Social & Geographic periphery in Higher Education**"
Lecturers: **Prof. Dan Ben-David, Itzik Turjeman**, **Prof. Moshe Mandelbaum**, **Etti Konor-Attias**.

Higher Education Forum No. 19 – 18.2.2011

Meeting on the subject: **"academic Independence & Autonomy in Institutes of Higher Education**"

Lecturer: **Prof. Amnon Rubinstein**.

Higher Education Forum No. 20 – 6.5.2011

Meeting on the subject: **"The Haredi Community in Higher Education**"

Lecturers: **Prof. Ithamar Gruenwald**, **Rabbi Yehezkel Fogel**, **Prof. Judith Gal-Ezer**, **Prof. Joseph Bodenheimer**, **Mrs. Adina Bar-Shalom**.

Excellence Evaluation of Universities in Israel – Approaches, Issues and Achievements

The goal of this project is to examine various aspects that concern excellence evaluations of universities in Israel. Approaches and issues concerning excellence evaluation are universal subjects that are dealt with by many countries. Correct evaluations contribute to the promotion of excellence, while inadequate evaluations may evoke negative processes and even significant damage. In addition to these universal subjects, the project deals also with aspects unique to Israel, expressed in the results of the excellence evaluation. The existing approaches and methods can be classified in general as follows:

- Quantitative methods to evaluate research, based mainly on publications and citation indices.
- Qualitative evaluations – peer review, panels, evaluation committees, surveys, polls, and so on.
- Combined methods that combine quantitative measurement methods with qualitative assessments.

Each of these methods has its own advantages and disadvantages, and they are all criticized, by both professionals and the subjects of the evaluation. The quantitative methods have significant defects and disadvantages that may create mistaken, biased and even misleading results related to various methodological defects, indices of limited usage, unprocessed data that include mistakes and errors, variance between the evaluated areas, inappropriate measurements and usages, and so on.

In an effort to examine these issues, the work presents the ratings of the first countries in the world in various areas, a comparative summary of Israel's position in the world, and a view of the universities in Israel based on various indicators, indices, and databases. The limitations of the indices are presented, as well as the results' biases under the influence of various assumptions. The clear conclusion is that quantitative results in general, and their significance in particular, should be considered carefully.

Also presented are the results of a qualitative assessment of studies in various areas in Israel, as these are reflected in the reports of international assessment committees that have operated in recent years, following the initiative of the Higher Education Council. A concise review is provided about the "influence" of universities, beyond academic achievement in research and teaching, which is expressed in their contribution to industry and technology. Innovative initiatives are presented to evaluate learning outcomes by creating valid indices.

The work presents a review of the university ratings, from the aspects of teaching and research. The ratings have a negative influence on the conduct of the institutions, which tend to ascribe greater significance to them than is possible on the basis of the data. The needed corrections and improvements are presented, as well as the results of the university ratings in Israel according to well-known international ratings.

The evaluation of research achievements for budgeting and funding purposes is discussed, which is a controversial subject. For selective funding, an appropriate evaluation system is required, whose operation involves high costs, mainly due to the variance between the institutions. The work presents several conclusions, resulting from an analysis of the Israeli, the British, and the Australian experience among others.

Head of the project: **Prof. Uri Kirsch**

A Comparative Outlook on the Development of Scientific and Technological Research in Israel and in other Middle Eastern Countries by Quantitative Indicators

Thomson Reuters published in 2011 a study of the many changes that have occurred in the last decade in research activities in the Muslim Middle East, as reflected in its database, ISI. The study reports impressive developments in terms of research policy, investments in research, and research outputs. These processes take place mainly in five countries: Turkey, Iran, Egypt, Saudi Arabia and Jordan.

Following this study, We performed a comparative analysis of the development processes of scientific and technological research that have taken place in Israel and in these Middle East countries. The data presented is based on two main commonly used indicators: the number of publications, which provides an estimate of the research productivity, and the average citations per publication, which provides an estimate of their impact, which in turn reflects the quality of the research. In addition, data are presented relating to the indicators of the most cited publications and researchers, which serve as indicators of the quality and importance of the publications. We also analyzed the number of US patents registered from these countries.

The data presented indicate that the following processes have occurred during recent years:

Significant and rapid progress of Iran and Turkey in many fields, relative to moderate progress (and sometimes, regression) of Israel in the same fields.

Progressively smaller gaps between Israel, Iran and Turkey that are expressed initially in the number of publications, and later in the average citations per paper.

Israel leads in most of the examined fields; however, Iran and Turkey have already surpassed Israel in some areas in the number of publications, and in a few areas even in the average citations of an article.

Israel is far ahead in the number of patents registered in the USA.

The rapid progress in the Middle East is the result of a number of factors, such as high investments in scientific research, multiple initiatives for the establishment of research centers, collaborations with leading universities in developed countries, and so on. All these lead to narrowing the gap in scientific productivity and quality between Israel and these countries.

The stagnation, and in some fields even decline, in Israel's scientific productivity and quality is the result of sharp cuts in governmental budget allocations to the research universities over the first decade of the 21st Century ("the lost decade"). This led to a decline in the number of faculty members, because the inability of the universities to recruit young faculty members; an increase in their average age, and a dangerous brain-drain. All these factors have adversely affected scientific productivity and its quality. Since the time constant to achieve research excellence is long, i.e., investments bear fruit only after many years, the full impact of the recent processes are yet to be felt.

The project team: **Yair Even-Zohar, Dr. Daphne Getz** and **Prof. Uri Kirsch**

C. Science, Technology, Industry, Economy and Human Capital

Science, Technology and Innovation Indicators in Israel: An International Comparison

The need to establish an infrastructure to promote a systematic and continued process of consolidating a national policy for research, technology and innovativeness was identified at the Samuel Neaman Institute in the early 2000s.

The first stage in a program initiated by the Neaman Institute was to establish a database and comparable and updated indices for the purpose of assisting policy makers to map and evaluate R&D activities in Israel, their capabilities, scientific infrastructures and funding over the years, and to compare them with those of other countries. In this framework, three reports on the subject of "Indices for science, technology and innovativeness in Israel: A comparative data infrastructure" have already been published.

The first publication in this series appeared in 2005. The pamphlet comprised three chapters: national expenditure on civil R&D; human capital in science and technology; and outputs in science and technology. It was written in a format similar to that of the pamphlets published by organizations in other countries and was received with great interest in Israel.

Encouraged by the success and interest engendered by the first publication, a second updated and extended edition in this series was prepared, this time in collaboration between the Samuel Neaman Institute and the Central Bureau of Statistics. It was published in 2007. This publication included all the three chapters of the first publication in an extended and updated version and two new chapters: Economic indices for science and technology actions and the introduction of technology into households.

A third publication in the series appeared in 2010, which included many key indices on the subjects of inputs and outputs in science, technology, and innovativeness. This

publication includes updated indices as well as new chapters such as Globalization and government assistance to R&D.

The next publication should be published by 2012 will include an update and extension of the issues that were in the previous publication, as well as new topics such as: R&D in ICT and biotechnology, R&D in hospitals, research institutes and R&D in Universities and government policy to encourage R&D.

These publications were designed to serve as a basis for international comparison and to analyze Israel's position on the various indices as well as to provide information to policy shapers and others who are dealing with policy issues in these areas. One of the major goals of the Israeli science and technology policy is to promote a balanced R&D system and to make sure that oriented R&D and innovativeness operate in a way that contributes to society and the economy. We hope that these publications will provide useful insights and will have an influence on the national and international policy and contribute to studying and understanding the present situation of Israel in the context of science, technology and innovativeness.

The project team: **Dr. Daphne Getz, Prof. Dan Peled, Tsipy Buchnik, Ilia Zatkovetsky** and **Yair Even-Zohar.**

R&D Outputs in Israel 1990-2008: Israeli Patents in an International Perspective

The Samuel Neaman Institute, in cooperation with the National Council for R&D (NCRD), has completed a study that analyzed Israeli R&D outputs between the years 1990-2008. The research investigated the inventive activity of Israeli applicants (assignees) and Israeli inventors in patent applications filed under the PCT and the characteristics of Israeli inventions in three patent offices – the United States Patent Office (USPTO), the European Patent Office (EPO) and the Israeli Patent Office. The study also included a comparative literature review that presented the rational for using patent indicators as a tool for innovation evaluation. The research was published in May, 2011.

A second research in the series is expected to be published in 2013. In this continuing research, the main indicators will be updated and furthered developed. Emphasis will be placed on the analysis of a "union set" (patent families) of Israeli patents, rather than on the examination of Israeli patents in a particular patent office. This type of analysis will be made possible by the use of PATSTAT - a comprehensive patent database recently purchased by SNI. The use of PATSTAT and additional supplementary databases (KUL's applicant harmonization and sector allocation tables; the OECD's triadic patents database and REGPAT database, Israel Venture Capital database) will enable SNI researchers to conduct an in-depth analysis of important R&D related themes such as emerging technological fields, the activity of multinational firms in Israel, international collaborations in inventive activities and the focus of local firms on emerging markets and economies.

The first publication in the series can be downloaded from:

http://www.neaman.org.il/Neaman2011/Templates/ShowPage.asp?DBID=1&TMID=581&LNGID=2&FID=646&IID=8087

Research team: **Dr. Daphne Getz**, **Dr. Eran Leck**, **Yair Even-Zohar**, **Orly Nathan**, **Amir Hefetz**

Israeli R&D Output: International Comparison of Scientific Publications, 1990-2010

The objective of this work, conducted by SNI with the collaboration of the National Council for Research and Development (NCRD) is to analyze Israeli R&D output depicted in scientific publications.

The data infrastructure collected enables us to evaluate the scientific position of Israel and to identify evaluation trends using several bibliometric indices through which one can learn of the scope and quality of Israeli publications in the various fields of science with an international comparison. Analyzing the authors' details allows us to assess collaboration patterns among Israeli researchers with their colleagues in Israel and abroad, in the academy and Industry.

The data for this work is based on the leading bibliometric databases from major providers, one of which is Thomson Reuters (ISI), which includes detailed bibliometric information of Israeli scientific publications and statistics of relevant indices from other countries. A team of SNI information experts processed and analyzed the data using unique software that was developed for that purpose. The final report will be published during 2012.

In this work, the scientific excellence of Israel compared to other leading countries will be emphasized, Indices which enable to trace developing research fields will be displayed and the R&D activities within the various sectors in Israel's economy (Universities and colleges, hospitals, the business sector and more) will be analyzed.

Previous report, which analyzed the Israeli R&D output (scientific publication) during 1981-2008, was published on 2011.

Research team: **Dr. Daphne Getz**, **Yair Even-Zohar**, **Iris Eyal.**
Advisor: **Prof. Gideon Czapski**

Innovation in the Service Sector

The study on the subject 'Innovation in the service sector' was initiated by the Samuel Neaman Institute and funded by both the Samuel Neaman Institute and the Office of the Chief Scientist at the Ministry of Industry, Trade and Labor. The study was performed during 2011.

The service sector constitutes a large part, ranging from 70 to 80 percent, of the overall economic activity of OECD countries. Therefore, it is important to identify what factors affect the growth and innovation in the service sector and formulate a policy that will, help to encourage and support companies, research and cooperation in the various industries of this sector.

This study is a preliminary work, which aims to create a clear picture of the characteristics of the service sector and open the door to understanding the topic of innovation in this sector.

The work includes five chapters:

The first chapter presents definitions and classifications in the field of trade and services. The second chapter presents key data which points to the importance of the service sector in Israel and in other countries in indicators of: GDP, employment, export, demographic of companies, and also data on innovation in the service sector using measures of: growth of total productivity, R&D expenditure and innovation expenditure. First two chapters are designed to create common language for discussing the subject, both in terms of definitions and classifications and in terms of key data that characterize the service sector.

The third chapter presents a literature review on service innovation based on studies done in recent years on the characteristics of innovation in the services, metrics and surveys used, and the importance of formulating a policy tailored to the service sector.

The fourth chapter describes the policies to encourage innovative services and the programs which were established to advance this field and the evaluation of the effects and impacts of the programs in several countries: Germany, Finland, Denmark, Iceland, Norway and Sweden.

The fifth chapter is a review of existing policies and programs for promoting innovation in the service sector in Israel, and the sixth and seventh chapters present a summary and some preliminary recommendations.

Our study suggests that further work is necessary, which will concentrate on a field study in industries that have potential added value in the area of innovation in Israel. The study will analyze and review the significance of innovation to the companies' growth and development and identify obstacles and problems that inhibit innovation. The findings of this study can help policy makers formulate effective policies targeted to promote innovation in these branches of the service sector.

Research team: **Dr. Daphne Getz** (Head), **Vered Segal, Tsipi Buchnik** and **Ella Barzani**

An Examination of the Collaboration between Industry and the Technion's Nanotechnology Infrastructure Centers

This study was invited by the Russell Berrie Nanotechnology Institute (RBNI) in order to increase the industry's cooperation with the Technion's nanotechnology Infrastructures centers.

The study includes a comprehensive survey of industrial companies that have used the Technion's nanotechnology Infrastructures centers and industrial companies in the nanotechnology and other areas that can potentially use the nanotechnology centers.

The survey aimed to analyze the needs of the industry regarding the use of nanotechnology infrastructure centers at the Technion in terms of the collaboration features, comparison with the existing cooperation of companies with other centers in Israel or abroad, the level of satisfaction of firms engaged in cooperation with the Technion's nanotechnology Infrastructures centers, expectations for improvement, barriers and other channels of possible cooperation.

The study includes also literature review of models for cooperation between academia and industry in general and in nanotechnology, needs and barriers to promoting collaboration between academia and industry, and national and local initiatives designed to promote collaboration between academia and industry in nanotechnology.

The work will include recommendations for improving and increasing collaboration between industry and the Technion's nanotechnology Infrastructures centers.

Research team: **Dr. Daphne Getz** (head), **Vered Segal**, **Bella Zalmanovich.**

Policy Incentives for the Creation of Knowledge: Methods and Evidence (PICK-ME)

Innovation and knowledge creation have long been regarded as key factors in the process of economic growth. A well-established consensus exists among researchers and practitioners alike that the presence of a targeted and coherent innovation policy constitutes a necessary condition for countries to undertake the path for sustainable economic growth. In the past decades, the bulk of innovation and technology policies has mainly been designed by relying on a **supply side perspective**, which implicitly assumed the creation of technological knowledge as an outcome of an existing R&D process. The **demand-side perspective** has long been neglected with respect to innovation policy, because policymakers, academics and the business community have mostly emphasized the benefits of supply side strategies. Only recently, the debate about innovation policy has gradually begun to focus on the role of demand, both public and private, in spurring innovation and technology creation.

The Samuel Neaman Institute has joined a consortium of seven countries in a project targeted at researching the demand side perspectives of innovation policies. The PICK-ME project is a part of the European Commission's Seventh Framework Program (FP7). PICK-ME will analyze the role played by the demand side in the generation and exploitation of innovation and productivity growth, at a theoretical and especially at an empirical level. The project will consider the linkages among the different institutional actors (research infrastructure, business community, policymakers) and sectors and will analyze the geographical dimensions in which these processes take place.

In the first year of our research, the research team focused on mapping innovation ecosystems in five of the countries involved in the project, including: Israel, France, Spain, Germany and Poland. Building the innovation ecosystems of each of the five countries was done using an innovative methodology developed by Prof. Amnon Frenkel and Prof. Shlomo Maital for this specific purpose. As part of Work Package 2, a new methodology for building a visual map of national innovation ecosystems was developed and implemented. This methodology was implemented for Israel, Poland, Germany, Spain and France. A working paper was written for each country, presenting the innovation ecosystem along with accompanying analysis. It involved

organizing workshops in which experts from Academe, industry and government participated, along with those from the private sector. These workshops were held in each of the five countries and provided raw data regarding "quality anchors" and "processes" (essentially, stocks and flows) that play key roles in innovation and provide a framework on which the innovation ecosystem for each country is based. The S. Neaman Institute research team processed the raw data from the workshops, and created five visual innovation ecosystem 'maps'. Then, the maps were compared and contrasted, to highlight similarities and differences, and to draw operational conclusions regarding innovation policy. These results were presented at the annual meeting of the PICK-ME research groups, held last November in Nice, France, and were highly praised by the participants. The next stage of the research will include preparation of a comprehensive survey of the literature on innovation and innovation policy, both for supply-side and demand-side aspects, which will build on the generic innovation ecosystem visualization derived from the individual ecosystem maps. A preliminary version of an integrative literature survey was completed, based on a 'generic' innovation ecosystem visualization, summarizing more than 200 research papers and books.

The Project started: January 2011. Duration: 42 months.

Research team: **Dr. Daphne Getz, Prof. Amnon Frenkel, Prof. Shlomo Maital, Dr. Eran Leck, Vered Segal**

Intellectual Property in the Government Sector

The purpose of this research is to provide a systematic basis for designing a policy on intellectual property rights on knowledge which is the product of government-funded R&D activity and is being performed within the government sector. The intention is to formulate recommendations for building guidelines on intellectual property management strategy, which is a product of government R&D, in line with Government R&D objectives, and knowledge transfer implications of state-owned IP through the commercialization of these IPRs.

In the scope of this work, the government R&D objectives in the various offices are reviewed. In addition, various questions are examined regarding the use of intellectual property rights on knowledge which is the product of government R&D activities, focusing on social and economic implications of the commercialization of such knowledge.

During 2011 we reviewed the government R&D activities – a normative examination of R&D objectives performed by government research institutes, by various ministries and by Chief Scientists in the various offices. The legal framework for managing intellectual property rights owned by the state was presented - reviewing latest legislation, new laws and policy documents.

In addition, this work will include a comparative overview of the selected OECD countries regarding their management of intellectual property which are a product of government funding.

Research team: **Dr. Daphne Getz, Larisa Eidelman, Bella Zalmanovich, Miriam Asotski, Sharon Bar-Ziv**

Facilitating Collaboration in Stem Cell Research through Intellectual Property

The purpose of this research is to provide a systematic basis for designing a research and development (R&D) policy framework and to facilitate knowledge transfer in the field of stem cell research.

The proposed study explores different frameworks for collaboration between government, industry and academic research centers and proposes effective valuation methods. The research also explores and analyzes the following aspects of stem cell R&D: (1) Stem cell R&D in Israel; (2) Regulatory schemes and legal / ethical impediments; and (3) Policy ramifications and legal strategy.

The research is carried out by the Samuel Neaman Institute in collaboration with the Law and Technology Center at Haifa University. Each of the teams offers a field of research expertise with a different emphasis on content and methodology, all in the science policy research field.

During 2011, the Samuel Neaman team performed the empirical work including data and information retrieval and mapping of R&D activities in the academy, industry and hospitals using survey questionnaires which were especially developed and personal interviews with scientists in the stem cells field were taking place. In addition, questionnaires were distributed to lawyers and/ or patent attorneys, and to the universities' technology transfer offices (TTOs). We also conducted bibliometric research of publications and patents.

In addition, we will provide data for further examination of factors and components required to prepare and combine recommendations which will contribute to leveraging the research in the stem cells field.

Research team at SNI: **Dr. Daphne Getz, Larisa Eidelman, Bella Zalmanovich** and **Miriam Asotsky**

Research team at Haifa University: **Prof. Niva Elkin-Koren, Dr. Yael Bregman-Eschet, Sharon Bar-Ziv, Talya Ponchek** and **Dalit Sagiv**

Specialization and Dispersion Measures for R&D Activities

R&D activities are conducted over many different scientific and technological fields, as well as many economic branches. The knowledge created by these processes diffuses to fields and purposes much wider than those targeted by the R&D performers. Such spillover effects are in fact the raison d'etre for public support to R&D. Researchers distinguish between spillovers" within" and "between" economic branches and scientific disciplines, and have shown that R&D activities across broad spectrum of fields is critical for a country's technological absorptive capacity.

This project develops and applies measures for the distribution of R&D across different economic branches and scientific disciplines. These distributive measures can be used to: (1) compare inventive efforts across economic branches; (2) track the evolution of inventive activity over time by branches; (3) international comparison of R&D activities, by fields and disciplines.

Several concentration measures from the economics and management literature will be examined. The aspects to be examined will include R&D expenditures by field, government R&D funding and support by field or purpose, and output of R&D efforts by field.

R&D expenditures and output by economic branches is available for over 40 developed countries, including Israel, from the Analytical Business Enterprise Research and Development (ANBERD) database of the OECD. Other forms of output, such as scientific articles and patents are available through dedicated databases developed and maintained at SNI.

This is a joint project of SNI, the National Council for Research and Development and the Ministry of Science. The project started in 2011 and is scheduled to last through 2013.

Research team: **Prof. Dan Peled, Dr. Daphne Getz, Dr. Eran Leck, Tsipi Buchnik, Ilia Zatcovetsky**

Tax Incentives for R&D in Israel

This work examines the provision of fiscal incentives for business sector R&D in Israel.

Over two thirds of OECD countries, and many other industrialized countries, are now offering fiscal incentives to business R&D in the form of R&D tax credits. This increasing tendency reflects both the need for additional incentive mechanisms to encourage inventive activities, as well as intensifying global competition on attracting R&D activities. Israel is one of the few OECD countries not to offer R&D tax credits. The Israeli government channels most of its R&D support and funding through R&D grants, administered by the Chief Scientist of the Ministry of Occupation Trade and Industry, and through R&D procurement by various government ministries and agencies. The only tax relief available for R&D in Israel is the ability to expense out all R&D outlays in the year they are paid. Similar deductions are available in virtually all OECD countries, on top of relatively generous R&D tax credits in most of them.

R&D tax credits leave to market forces and entrepreneurs, rather than government officials, the choice of R&D directions and projects to be pursued. Obtaining the tax credit benefit is a relatively simple process handled by tax authorities using regular tax returns, thus avoiding the complex and uncertain processes of R&D grant application, review and monitoring. Consequently, this much simplified support channel may appeal to firms that are not able or interested in submitting detailed R&D project proposals, and subject their R&D projects to on-going external financial monitoring. R&D tax credits can be directed to firms of certain size, or other desirable characteristics, and can include innovative efforts not confined to technological R&D.

One of the drawbacks of R&D tax credits is that the foregone tax revenue due to R&D tax credit cannot be controlled by the government once the scope and design of the program is set. In addition, special accounting and compliance procedures need to be established so that the business community and the tax authorities can handle this credit efficiently.

This project will review existing methods of R&D tax credits in other countries and their effectiveness. It will involve both theoretical and empirical research, some of it conducted originally for SNI, on the way government stimuli of various kinds affect business R&D expenditures and the type of firms that choose to invest in R&D. This research will rely on CBS collected data on R&D outlays in Israel.

This is a joint project of SNI, the National Council for Research and Development and the Ministry of Science. The project started in 2011 and is scheduled to last through 2013.

Research team: **Prof. Dan Peled, Dr. Daphne Getz, Tsipi Buchnik, Ilia Zatcovetsky, Avi Sasi**

Evaluation of the Performance and Contributions of Immigrant Scientists Employed within the KAMEA Program in Academic Institutes in Israel

During the past two decades there have been employed thousands of immigrant scientists in academic institutes in Israel, within the framework of various absorption programs (Shapira, Giladi and Kamea). The Ministry of Absorption, through it unit of Absorption in Science, allocated most of the funds for these programs that were supplemented by inner- and outer-university sources. The present study is focused on the group of the senior scientists, the Kamea scientists. Data for this group will be gathered and analyzed with a view to quantify and present their contributions and impact on various aspects of research, teaching and a variety of activities relevant to academic research and to industry. Data will be mined from all universities and other institutes that have employed the Kamea scientists.

Among the topics to be included are: statistics (present and past numbers, education, areas of expertise, gender, age, tenure in academic frameworks (including other absorption programs), sectioning among universities, etc.), budgets, participation in research, publications of articles and books, development of teaching and research laboratories, prizes won, initiation of hi-tech companies, contributions to industrial activities in Israel, and more.

At the present stage a questionnaire has been composed and is being distributed to the scientists. Subsequently personal interviews will be conducted with a number of scientists and with senior faculty members with whom they collaborate.

Principal investigator: **Prof. (em.) Avraham Shitzer,** Faculty of Mechanical Engineering, Technion, and Neaman Institute

Research assistant: **Miriam Asotsky**

Information Centers of MAGNET Consortia

A computerized information center, one of the largest in Israel, operates at the Samuel Neaman Institute. The center was established to fulfill the needs of knowledge management and to supply information science services to consortia that operate within the MAGNET program. The information centers are based on a computerized system, planned according to the requirements of the staff of the Samuel Neaman Institute in collaboration with the consortia.

For the past nineteen years, the Samuel Neaman Institute participates in the MAGNET program of the Industry, Trade and Labor Ministry, the aim of which is to encourage generic-technological R&D in Israel. The goal of the program is to create cooperation between companies in industry and researchers from the academy in R&D in various areas. The program was launched in 1992 by the Chief Scientist of the Industry, Trade and Labor Ministry. At present, MAGNET operates sixteen consortia and supports three other tracks for the development of high-tech industry (Users' Association, MAGNATON and NOFAR).

The Samuel Neaman Institute has contributed greatly during the establishment and development stages of the program, in cooperation with the Chief Scientist, and has acted as a mediator between the academy and industry in encouaging joint R&D and transferring technologies between the two sectors. The Samuel Neaman Institute defined the idea of a central information center of MAGNET consortia as part of the cooperative effort between all the researchers in the industry and the academy who are members in these consortia.

During 2011, the Samuel Neaman Institute operated ten information centers for MAGNET consortia. In 2012, one consortium will complete its research period and we shall submit proposals for information centers for new consortia that MAGNET approved and will approve.

The services provided by the information centers include:

1. **Establishing information database**: The database is intended to organize and store the internal information created in the consortium; it includes periodic technical reports, presentations, contact lists, forms, correspondance, and so on.

The website of the information database is accessible to authorized users only. The website's system for information management is based on a standard internet interface, allowing quick and convenient access to information.

2. **Information science services**: The service's purpose is to provide the consortium members with updated information published on the subjects dealt with by the consortium. The information is retrieved from technical professional databases and from websites; it includes standards, patents, professional articles and news. The information is distributed to the consortium members on a regular basis.

3. **Aid tools for organizational management**: the upgraded system provides modules to assist in the organizational management of the consortia, such as workgroup meeting management, through an interactive calendar, mailing lists for transferring messages and annoucements, and secured forums for holding unstructured discussions between the consortium's members.

4. **Consortia's open websites:** building websites for consortia that are interested in publishing their activity around the world, including: NES, BMP, NET-HD, HySP, ISRC, NEGEV, TERA SANTA, and so on.

5. **Human resources:** the information center employs seven information specialists who established and manage the different information centers.

Information centers for consortia operated by Samuel Neaman Institute in 2011:

Next Generation Personalized Video Content Services (NEGEV)

Negev Consortium is dedicated to building generic technologies Personal Content Services of huge content amounts to millions viewers. Negev members research and develop Service Management aspects (such as content recommendation, personal ad selection, etc.), Content Management aspects (video classification and tagging, content preparation etc.) and Content Delivery aspects (Online content adaptation, ad insertion, network resource optimization etc.).

Bio-Medical Photonics (BMP)

The BMP consortiums' develops **photonic based** generic technologies for diagnostic and therapeutic solutions for the bio medical field in general, and the gastrointestinal tract diseases in particular.

Rapid Deployment of Broadband Communication for Rescue Forces (RESCUE)

Rescue concentrate in technologies for self-deployable, self-routing, self-healing and distributed core in mobile and deployable broad band wireless networks. The solutions foreseen next generation technologies include mobile Ad-hoc Relay/Mesh routing, Peer-to-Peer communications, SON (Self Organizing Network), Satellite backhauling and interoperability among various mobile wireless technologies.

Real-Time HDTV-Quality Video on the Open Internet Web (NET-HD)

The Net-HD consortium develops new technologies to increase the effective capacity of the internet network to provide HD video, multiply the existing volume by 1000 and without increasing the physical links.

Advanced Fiber Lasers (AFL)

The AFL Consortium develops generic technologies for production of advanced fiber-lasers. The consortium concentrates on the more unique MID-IR and UV wavelengths, as well as focusing on fiber-coupled optical components; pumping diodes; optical crystal manufacturing and optimization of systems incorporating fiber-lasers.

Nanotubes Empowerment Solutions (NES)

The NES consortium develops new game-changing in various technological fields based on the innovative use of nanotubes. The main applications are: Enhancement of mechanical properties, electrodes for electricity conduction and accumulation, optical layers, micro devices and sensors.

Cognetive Radio Network (CORNET)

CORNET Consortium provides generic solutions and building blocks based on cognitive radio networks technologies to get breakthrough in spectrum usage and spectrum utilizations.

Hyper Sensitive Photonics (HySP)

HySP consortium deals with technologies development of digital cameras, processes and methods of ultra-sensitive imaging arrays, Hyper Sensitive Photonics.

Next Generation Packet-Optical Networks (TERA SANTA)

The TERA SANTA consortium develops technologies and building blocks to realize the next generation of optical networks, which will provide a solution to the tremendous rise foreseen in the communication volumes. This vision will be materialized by using an OFDM 1 Tbps channel technology, while practicing a healthy network economy (operation and equipment layout costs compared with the network income), and achieve the front of the optical network technology of high volumes and rates.

Israeli Smart Grid (ISG)

Recently–formed ISG is a consortium of leading Israeli companies and academic research institutes operating together under the MAGNET Program, in the office of the Chief Scientist of the Ministry of Industry, Trade & Labor, targeting to develop next-generation unified Smart Grid monitor & control with communication networks for electrical companies.

The ISG consortium will focus on the smart grid of the future, addressing all issues related to communications, monitor and control of transmission, distribution and generation of energy to and from the home network.

Manager: **Dr. Daphne Getz; Coordinator: Josef Linhart**

Information specialists: **Orly Nathan, Ella Barazani, Bella Zalmanovich, Ortal Faibushenko, Iris Eyal, Ayelet Rave** and **Yair Even-Zohar**

Chief information officer: **Golan Tamir**

D. Energy and Environmental Policy

In recent years, issues that have traditionally been associated to the environment have become topics that touch a variety of areas, and are today at the center of the global agenda. Issues such as global warming and climate change, greenhouse gas emissions and local air pollution, waste, renewable energy and electricity production, green building and more – all these issues are undergoing changes, technological developments and accelerated regulation around the world, as well as in Israel.

The concept of sustainability, which is based on the three pillars of environment, social and economic, has become a common idiom used by all, and is assuming a real meaning in new projects, government subsidies and financial investments.

Israel, which joined the OECD in May 2010, has taken upon itself, among other commitments, the obligation to address environmental challenges and has promised to adhere to the highest of standards as the other members of the Organization. In the Environmental Performance Review (EPR) of Israel, which was published by the OECD in November 2011, one of the key topics mentioned were the population growth rate and economic growth in Israel. The outcome of these topics is that environmental challenges must be addressed immediately.

The Environment and Energy Team at the Samuel Neaman Institute works on a variety of topics that are part of the current Israeli environmental agenda – waste management (municipal, hazardous, and packaging); greenhouse gas emissions reductions; energy-related issues, including mapping the R&D activity in the energy field in Israel; writing national priorities documents that are intended to provide a review of the current affairs and provide recommendations to achieve defined goals.

Climate Change - Mitigation and Adaptation

1. National Priorities Report on the Environment – Addressing Greenhouse Gas (GHG) Emissions in 2011

The work of the Samuel Neaman Institute in the field of the environment is considered significant and is an important resource for decision makers in Israel.

One of the Institutes' main roles is to bridge between academia, industry and governmental decision makers by offering the capability of providing government agencies with applicable and timely information that has been developed by various academic institutions in Israel.

In the years 2009-2011 the Energy and Environment Team at the Samuel Neaman Institute served as a professional advisor to the Ministry of Environmental Protection in developing the National Plan for Greenhouse Gas Mitigation**.** This document, the seventh in number, is a continuation of the Team's work.

Apart from the commitment of the State of Israel to reduce greenhouse gas emissions, as stated by Israel's President Peres at COP-15 in Copenhagen in December 2009, the issue of GHG emissions reductions is vital to the Israeli economy as well. The actions required to achieve emissions reductions will also result in reducing the burden on the power sector, ease the need for power generation reserves, increase the size of the power reserves, reduce the emissions of pollutants that cause negative health effects and increase mortality. On the whole, the economic benefits of GHG emissions reductions will be much greater than the initial costs of the actions taken while also aiding in reducing social disparities.

The document provides a brief overview of the information gathered in Israel and around the world on the issue of national policies aimed to reduce greenhouse gas emissions. The report further provides a recommendation for an Israeli National Plan for Greenhouse Gas Emissions Reductions that was formulated by an inter-governmental committee headed by the Director-General of the Finance Ministry, and approved by the

government of Israel on November 2010, allocating a 2.2 Billion NIS budget for the next decade.

This plan addresses critical issues associated with GHG emissions reductions and is an important first step. Yet, it is not enough, and a long-term, more comprehensive, road map is needed. Under the current conditions and the current plan, Israel will not be able to meet its commitment.

In this National Priorities Report on the Environment, the Team presents an array of topics that were not addressed during the work of the inter-governmental committee – issues such as clear indices to evaluate emissions reductions, evaluations of the entire Israeli market, and the issues of introducing renewable energies and the change in the fuel mix in the production of electricity. All these issues, and others, are reviewed in this document in order to lay the ground for the needed road map to achieve the goal of 22 million ton CO2 emissions reduction by 2020.

Vision and courage are required to decide on and implement long-term decisions, decisions that will not necessarily bear fruit in the short term, but rather in the more distant future. The vision and courage involved in taking actions to reduce GHG emissions is an existential necessity and not a mere option.

We are proud that this document is an important tool for the Knesset Committees and the Information Center of the Knesset, which use it to track the implementation of the National Plan for GHG Emissions Mitigation.

Project Leader: **Prof. Ofira Ayalon**
Project team: **Tal Goldrath, Michal Nachmany, Dr. Perry Lev-On** and **Dr. Miriam Lev-On** of The LEVON Group, LLC – California, **Gadi Rosenthal** of Kivun Economic Consulting, **Dr. Ruslana Palatnik** and **Helena Feitelson** of NRERC, Haifa University.

2. Voluntary Greenhouse Gas Registration and Reporting Program

A joint project undertaken and co-funded by the SNI and the Ministry of Environmental Protection.

Israel recently joined the Organization for Economic Co-operation and Development (OECD) and is on the verge of a new era. The change of status, from a developing country to a developed country, raises the need for change in the way infrastructure and the environment are managed in Israel. As part of this change, the government of Israel has acknowledged the importance of the mitigation of greenhouse gas (GHG) emissions, even though Israel is currently not formally bound internationally to reduce its emissions.

Israel is starting now to establish national GHG mitigation targets and is in the process of putting together relevant legislation to allow the various government departments to reach these targets within their authority.

To allow for management and monitoring of the fulfillment of greenhouse gas mitigation targets, a National Greenhouse Gas Emission Registration and Reporting program has been set up. The program, designed to serve industrial, commercial, financial and other organizations, has been in place since mid-2010, and the first reports addressing 2010 emissions were received in the first half of 2011.

The registration and reporting program was designed by the Samuel Neaman Institute and the Ministry of Environmental Protection, in cooperation with a Steering Committee (the Team) comprised of many stakeholders, including government officials, industry representatives, public transportation companies, local authorities and NGOs. Numerous meetings of the steering committee were held as well as individual meetings with key companies in the Israeli industry aimed at promoting and encouraging participation in the registry program. Also held were training and guidance sessions for companies that joined the registry and technical support was provided to assist in filling the report files.

The goal of the team was to develop a practical, user-friendly program, including detailed reporting guidelines that will support organizations and companies from all sectors of the economy in the process of reporting and registering their greenhouse gas emissions inventory.

The Registry's stated goals are:

- To enable reporting entities to promote efficiency by self-learning and internalizing efficiency-oriented processes, leading to emissions reductions and to increased operating profitability;
- To publically expose relevant GHG emissions information, allowing for deeper understanding of national emissions, and raising awareness for the need for needed public action; and
- To support the government in the development of future policies to promote the reporting of data that will deepen the understanding of emission sources and their mitigation potential.

The Israeli registry protocol was developed in line with the needs and constraints of the diverse reporting entities, and according to understandings achieved in studying similar protocols worldwide. The registry protocol is meant to encourage balanced, verified reporting, meeting international standards.

Although joining the registry program is voluntary, once an entity has joined the program, it is bound to report according to the detailed protocol requirements.

The registry program includes a detailed protocol, allowing entities to analyze, quantify and report their annual emissions inventory, according to their activity scope. An Excel file was developed to enable simple, user-friendly reporting interface, according to available and easily accessible data, such as utility bills, fuel expenses and raw materials inventory. The reporting protocol, which is based on accepted international methods, will create a clear basis for future international reporting.

25 organizations from different sectors of the economy announced their intention to participate in the registry program. 21 organizations eventually joined the registry program and reported their GHG emissions in 2010. Their reports can be found on the Ministry of Environmental Protection website.

An official awards ceremony took place in November 2011 and certificates recognizing the reporting organizations were presented by the Minister of Environmental Protection.

Project Leader: **Prof. Ofira Ayalon**
Project team: **Tal Goldrath, Dr. Miriam Lev-On** and **Dr. Perry Lev-On** of The LEVON Group, LLC - California

3. Israeli Climate Change Information Center

The Ministry of Environmental Protection initiated the recent establishment of the Israeli Climate Change Information Center (ICCIC) to serve as an information and knowledge center. The objective, during the initial stages of operation/management, is to gather and coordinate the scientific knowledge available on climate change issues in Israel in the areas of regional climatic forecasting, water management, urban planning green building, public health, biodiversity, forecasts for geopolitical conditions due to climate change and, of course, economic implications of CC. During the first year, researchers at the Center will focus on assessing research gaps in existing knowledge on the impacts of climate change in Israel based on different scenarios, surveying available means for minimizing damage and vulnerability, and identifying the available Israeli technologies for dealing with climate change. Information will be incorporated in policy documents and will contribute significantly to the formulation of a national action plan for adaptation.

The Center will be prepared and willing to serve as a regional and international hub, for the sharing of information and accumulated knowledge with other countries faced with adaptation challenges.

A number of factors combine to make Israel a potential center on adaptation to climate changes, including:

- Existing research capacities in fields such as effective water management systems, recycling and reuse of treated wastewater, seawater desalination, desert agriculture and forestation.

- Proven know-how in such fields as water saving in the urban, agricultural and industrial sectors;
- Research and development of innovative technologies in such areas as drip irrigation, water leakage prevention, renewable energies and more.

The ICCIC is located in the University of Haifa with visiting researchers from the Technion-IIT, the University of Tel Aviv, and the Neaman Institute. In addition, the Neaman Institute had provided an internet platform for the project, which serves the project managers and contacts from the Ministry of Environmental Protection.

The head of the project is **Prof. Mordechai Shechter** (University of Haifa)

The acting director is **Prof. Ofira Ayalon**

The head of the Economic team is **Prof. Mordechai Shechter** (University of Haifa)

The head of the Geopolitics is **Prof. Arnon Soffer** (University of Haifa)

The head of climatic changes and models is **Prof. Haim Kutiel** (University of Haifa)

The head of water sector is **Prof. Nurit Kliot** (University of Haifa)

The head of public health is **Prof. Manfred Green** (University of Haifa)

The head of biodiversity and ecosystems services is **Prof. Marcelo Sternberg** (Tel Aviv University)

The head of green building is Prof. **Guedi Capeluto** (Technion)

Energy Forum Meetings

The purpose of the Energy Forum meetings is to provide a professional platform where professional can discuss specific energy related topics. At the same time, the Forum allows multilateral discussions encouraging projects in the fields of renewable and energy conservation. The forum meetings serve as a platform for defining professional, applicable positions, to be used by relevant decision makers.

Energy Forum meetings are closed meetings, to which approximately 20 experts on the debated subject are invited .

Each meeting is summarized in a detailed report, presenting an updated overview of relevant activities in Israel and the world, technological and economic rationales regarding the discussed topic, and the positions of the various professionals invited to take part in the forum.

The reports are intended to promote rational and scientific based decision making on energy related topics, and serve as a working tool for the Ministry of Finance, the Ministry of Energy and Water, the Ministry of Environmental Protection and others.

In 2011, four Energy Forum meetings were held:

1. **20th Energy Forum: Grid-connected photovoltaic systems for the residential and commercial sectors (14/2/2010)**

Photovoltaic (PV) systems are currently the most common method for producing solar electricity. Their great advantage lies in their many installation options and their variety of energy outputs, beginning with less than one kilowatt peak (kWp) systems, which can be installed on a single pole or small roof, up to systems of many Megawatts peak (MWp), covering extensive areas, which are suitable for power stations. The alternative solar thermal system is cheaper in terms of investment per installed kW and is more effective in terms of efficiency, space utilization and backup possibilities. However, the size (and land) required is at least of some dozens of MW and it is therefore suitable only for power stations.

Among the issues discussed in the forum were: quota assignment with preferable tariff, regulation, enhancement of local production, land use for commercial systems, and others.

2. 21st Energy Forum: Energy-saving retrofit of buildings (16/5/2011)

Many buildings in Israel, both private and public, were built in the years before prevalent awareness of the need for energy savings. Naturally, these buildings are wasteful in terms of energy, consuming a great deal of energy for climate control, (both in winter and summer), for lighting, and the like. The reasons for this lie in the 1) design (inadequate use of shading, natural ventilation, building orientation, etc.), and in the 2) execution (using building materials that are not properly insulated, inadequate sealing to prevent air infiltration, structure and location of windows, and the like).

The subject of energy saving retrofits of existing buildings is gaining increased awareness and momentum. While in many cases the related expenditure is not worthwhile, it might be justified in others. Beyond the pure economic calculation made by an apartment or house owner, there is room to consider the benefits to the economy and the environment, and provide incentives accordingly. This was the purpose of the discussion in this Forum.

3. 22nd Energy Forum: Nuclear Power Plan in Israel (14/11/2011)

The topic of building a Nuclear Power Plant (NPP) in Israel has been on the agenda of the Israeli market since the 1970s, as part of the decision to diversify the fuel mix of the country. Nuclear energy is an available energy source, which is based on a known technology, and is a clean energy source since it does not emit different air polluters (including GHG). Adding this source of energy to the Israeli market can be a turning point in reducing greenhouse gas emissions and improving air quality in general. In addition, this energy source might reduce the country's dependence on importing fossil fuels.

There are some elementary challenges that must be addressed before establishing a nuclear power plant in Israel. The main issues are related to regulation that causes a delay of years and public acceptability. The discovery of gas reservoirs near the coast of Israel allows for more time to address these problems. Until then, there will be more

experience and better and advanced mining technology. In the meantime, the Forum is discussing the possibility of setting up nuclear power plants in Israel and needed perpetrations and advocacy efforts.

4. 23rd Energy Forum: Wind Energy in Israel (19/12/2011)

The production of energy from wind turbines is a growing global trend, and represents a major share of renewable energy in developed and developing countries. In Israel, regulatory obstacles and the lack of available data make it difficult for entrepreneurs to start projects. In addition, there is more focus on the development of solar energy and it is prioritized over the development of wind energy, which makes it difficult to promote in terms of economic feasibility.

The Forum addressed the current barriers in the market today and what needs to be done in order to remove them and improve processes, especially for those projects that are already in the making. The Forum called for a pulling of efforts in the data area (wind atlas, bird migration mapping, and land marking) and the information area (the establishment of a Wind Energy Association, and the development of an information and advocacy center). There is no doubt that wind energy can be a significant addition to the energy market; it has many benefits including pollution mitigation, dual land use, and little land use compared to other renewable energies.

Project Leader: **Prof. Gershon Grossman**
Project Assistant: **Tal Goldrath**

Water Forum Meetings

The Samuel Neaman Institute, in collaboration with The Water Authority and the Grand Water Research Institute at the Technion, established the Water Forum at the Samuel Neaman Institute in 2009. The Forum provides a place where key issues can be debated with the purpose of drafting position papers to help formulate strategies and policies. The discussions in the Water Forum form an academic/professional framework that includes experts from academic and scientific institutions and public/government organizations dealing with challenges related to the subject of water. This framework is an important resource in examining, analyzing and outlining a long-term policy for the water system in Israel. Forum documentation is formatted to serve decision makers and policy shapers.

Water Forum 2: Water and Agriculture, Held on March 2011

Background

The agricultural activity in Israel requires substantial water supply and particularly for plant growth. Due to the climatic characteristics of the region, crop production and particularly during summer time, can-not be maintained without proper irrigation both in terms of water quantity and quality. In 2008 agricultural production required 1120 MCM (million cubic meters) out of which 630 MCM were fresh water and 490 MCM were brackish (reclaimed wastewater- RWW, saline water, runoff). Until the eighties most of the agricultural demand was provided by natural water resources. From mid-eighties there is a continuous increase in the use of RWW providing in the last years about half of the water used in agriculture. While in the past agriculture consumed about 65% of the fresh water, this percentage is continuously and significantly decreasing, as farmers face reduction in fresh water quotas and the use of RWW is continuously increasing.

Water use efficiency (crop production per water unit) is continuously increasing in the last decades from a reference value of 100 (in 1985) to 212.5 in 2007. Agricultural production strongly depends on water supply, water quality and reliability of its supply. Decreases in quantities, quality or problems with the reliability of supply are

likely to hurt production and yields and also to damage other agricultural means of production which can be affected due to water shortage. In addition, these reductions can also adversely affect the environment and the quality of water supplied to other sectors.

In government decision 828 (from 6.01.2000) the total water allocation (quota) for agriculture from 2010 and on was set as 1,150 MCMY (millions cubic meters per year) out which only 450 to 530 CMCY will be fresh water! This amount should be first reserved for regions which do not have regular supply of RWW. A major issue of concern to be accounted for in the long term plans of water supply and water policy in Israel is the interaction between water allocation required to sustain agricultural production and activity versus other considerations related, in the widest sense, to economy, societal needs, environmental needs and rural and urban development.

In 2006, an agreement was signed with the farmers that "frames" the increase in water prices for agriculture so that it reflects the average costs of water delivery. In addition, farmers received support to assist their adaptation to the increased cost. The agreement included special reference to the different water sources – fresh water, RWW and "Shafdan" originated water (via SAT, soil aquifer treatment). All prices are affected by the cost of the fresh water and the beginning of the price increase was set to 2010. Water supply to agriculture is based on historical quotas denoted "1989 quotas" which were based on the geographic (regional) location of the farms.

In the **second water forum** held on March 2011 at the Technion, about 80 to 90 experts and academicians involved in water sciences and engineering aspects, participated in two professional sessions devoted to major subjects:

1. Management interface between agriculture and national water supply
2. "Regulation"

In each of the sessions, leading experts were invited to present key issues related to the major topics and these were followed by an open discussion focusing on key points raised by the speakers. The workshop was ended with a panel session where core questions raised during the day were examined. A final report for the whole day was prepared detailing the presentations and discussions in a manner that can serve the

public as well as be used by experts and policy makers. A brief presentations of the main points raised and emphasized during the workshop are listed below:

List of Critical Points and Issues Raised During the Workshop:

- The lack of well-defined national targets for agriculture is apparent and the government should be encouraged to form mechanisms and ways for defining such targets;
- Materialization of the national plans is expected to create a situation with no water shortage, on the other hand this requires a reliable definition of the real needs of the agricultural production;
- Special efforts should be devised to assure that the water policy will consider water quality aspects and refrain from focusing only on quantity issues;
- There is a clear tendency to move towards regional management – this in turn requires: checking how to define a region? what should be the rules for managing a region? and how should it be managed vs. the central regulation?
- Water pricing for agriculture should be re-considered. There is agreement that the existing pricing policy is "old fashioned" and non-transparent enough. The issue of "quota mobilization" must be farther considered and developed. The reliability of water delivery should also be considered when dealing with water pricing policy for agriculture;
- Farmers do not pay the full cost of fresh water- this issue should be clarified and with a full transparency of the rules and principles of water policy and pricing;
- The issues related to " water production costs" are not clear enough and require re-consideration;
- Regulations supporting "nature preservation" are required including specific issues related to water resources;
- Special attention should be given to Reducing environmental pollution due to agricultural activity;
- Special and continuous efforts must be devised to monitor the accumulation and adverse effects caused by residual chemicals such as drugs, hormones and cosmetics and other micro-pollutants in reclaimed wastewater that may be absorbed by crops.

These actions should support improved regulation and assure sustainable use of reclaimed wastewater

Project leader: **Prof. Avi Shaviv**

Project assistant: **Tal Goldrath**

In collaboration with: **Miki Zaide** – Water Authority, Israel ; **Jorge Tarchitki** – Hebrew University, Jerusalem

Needs and Priorities in the Haifa Bay Development towards a Balanced Prosperity

During February 2011, a workshop was held at Samuel Neaman Institute in cooperation with the Kishon River Authority, with the purpose to define the major issues for the development and prosperity of the Haifa bay area, and identify the correct balance between them, and by doing so achieving the goal of long term planning and integration. In the workshop, issues were discussed as markers for development trends.

The workshop included a discussion and a brain storming session in three working groups - social, economic and environmental. The workshop results set a basis for a multi-disciplinary discussion concerning the bay area development and what guides this development strategy.

Following the workshop, on December 2011 a sustainability conference was held, which deal in part with the recommendations from the workshop. Common discourse among industry, government, NGOs, academia and the public emphasized the fact that this is a process that has begun, but still requires much work and continuous cooperation among the different stakeholders.

Project Leader: **Prof. Ofira Ayalon**
Project Team: **Tal Goldrath and Yael Rozenfeld**

Green Campus

The Green Campus project in the Technion, promoted over the past decade by the Samuel Neaman Institute, aims to introduce and amplify environmental values to the Technion community. The goal of the project is to promote green environment in the campus, while raising the environmental awareness of students and staff – an awareness that will also continue its impact off-campus, in the homes and workplaces of Israel's future engineers.

The project is run by the Green Campus Council, appointed by the president of the Technion, and composed of Faculty members, key personnel in Technion administration, head of Construction and Maintenance Division, Technion spokesman and more. Key partners are the Student Council representatives, which take on significant roles in the various initiatives and conduct ongoing environmental activities around campus .

Prof. Tali Tal, of the Department of Education in Technology and Science, heads the Green Campus project.

Green Campus activities include: education and awareness raising, resource saving (water, energy, waste recycling etc.), pollution prevention and more. The Green Campus coordinates the different environmental activities on campus, and serves as a meeting place for entrepreneurship as well as a communicating tool of the different activities occurring on campus.

Main projects in 2011:

1. **Energy Saving Forum** – led by the Construction and Maintenance Division, the energy efficiency and saving programs continue to operate in the following faculties: Electrical Engineering, Physics, Computer Science, Civil and Environmental Engineering, Water Institute, Biology and the department of Education in Technology and Science. Another program has been operated in the student dormitories in the past 4 years – in all dorms which are equipped with air conditioners, smart, remote-access metering systems are installed, and students pay their monthly electricity bills. The meters are installed in 600 (of

1400) housing units and lead to estimated annual savings of NIS 2 million. Total savings from this project (across the Technion): NIS 6,250,000 (since the beginning of the project in 2007)

2. Green Day on campus – An environmental carnival on campus to showcase environmental activities and raise awareness among students. The event is organized by the Student Union and Green Campus Coordinator.

3. Give 'n' Take" market – to encourage 2nd hand culture, organized twice a year by the Student Council.

4. Electric Vehicle project on campus – led by the Student Council and supported by the Neaman Institute. Contract should be signed soon and electric vehicle charging spots should be installed on campus.

5. Waste treatment on campus and in the dormitories – collection of electrical and electronic waste, of bottles and beverage cans for deposit, operation of organic waste composters in the dormitories, in cooperation with Technion gardening services.

6. Introducing the Green campus project to various guests.

7. Participation in conferences and seminar to present the achievements of the Green Campus.

8. A new Green Campus website will part of the Technion web portal and is currently undergoing content updates.

Green Campus project leader on behalf of the Samuel Neaman Institute: **Tal Goldrath**

Packaging Law – Pricing Model

The Energy and Environment Team at the Samuel Neaman Institute advised the Ministry of Environmental Protection in writing the Packaging Law in 2010. The purpose of the law is to define the procedures that will guide the production of packages and the waste management of packages, in order to decrease consumption and the negative impact on the environment. The Law attempts to achieve this goal by 1) placing increased responsibility on producers and importers to achieve recycling goals of packages waste, and 2) place responsibility on those who remove waste (mainly local authorities) to determine arrangements for separation, collection, and removal of waste packages. The duty of the producers and importers will be done by a "know organization" that will be financed by them and will communicate with those responsible for removing the waste.

In clause 23(e) in the Law, it was decided that a Pricing Committee will be established. The goal of the Committee will be to advise the Minister of Environmental Protection on setting prices for the separation, collection, and removal of waste packages according to the arrangements set.

Prof. Ofira Ayalon served as a professional adviser of the Pricing Committee.

Energy Master Plan

The Ministry of Energy and Water (formerly, the Ministry for Infrastructure) issued a tender in August 2010 requesting proposals for the development of an Energy Master Plan for the Israeli market, and in 2011 the TAHAL Group was chosen to develop the Plan.

The Energy and Environment Team at the Samuel Neaman Institute was selected to be part of the consulting team assembled by TAHAL. The Team is responsible for evaluating the environmental impacts of the different potential energy scenarios. In addition to defining environmental goals, the Ministry asked that the Master Plan include courses of action that will reduce the economic and environmental costs to the Israeli economy.

As part of the Energy Master Plan, the Energy and Environment Team will assess environmental parameters that affect and will be affected by the energy market, these include:

- Electricity production – a review of the costs in environmental damage from various power stations, as well as benefits, and an environmental-economic analysis of the different energy sources for electricity generation;
- Energy efficiency and its environmental impacts – energy efficiency has many advantages, including: economic savings, reduction of environmental pollutions, and addressing present demand for additional electricity production;
- Demand management and load shifting – demand management is a tool, which when used correctly, can be of great benefit to consumers, the producer (Israel Electric Corporation) and the national economy;
- Renewable energies – the Team will assess the environmental impacts of the different types of renewable energy (mostly solar, wind and biomass), their benefits and their impact on public open spaces;
- Transportation – Issues such as growing demand for energy efficiency in transportation, using renewable sources (for example, electric cars), and

petroleum substitutes will be examined in light of their costs and environmental benefits;

- Energy use in industry - Issues such as growing demand for energy efficiency in industry, using renewable sources (for example, solar heating), and petroleum substitutes will be examined in light of their costs and environmental benefits

Project Leader: **Prof. Ofira Ayalon**
Project Team: **Tal Goldrath and Yaara Grinberg**

Collaboration with the Standards Institution of Israel

The Energy and Environment Team members are members in several committees of the Standards Institution, which are meant to define and design standards in the energy and environment fields. Among the committees the teams members participate in are:

- Technical Committee 1206 "Products with an Environmental Aspect" – Prof. Ofira Ayalon

- Technical Committee 2201 "Energy Management Systems" – Tal Goldrath

As part of the work with the Standards Institution, the Energy and Environment Team at the Neaman Institute is summarizing documents that are supposed to assist the Institution in presenting the Voluntary Greenhouse Gas Registration and Reporting Scheme in Israel to organization in the county and the world.

The first document summarizes the Israeli policies, in comparison to policies abroad, in order to allow international organizations assess its applicability to reports calculated according to similar mechanisms.

The second document is a report on the ISO 50001 Energy Management Systems Standard and the Israeli Standard that adopts the international standard. The purpose of the report is to provide an initial review of the implementation of the standard globally and in Israel. The international standard, which was published on June 2011, and

respectively the Israeli standard, provide an organization with the framework to develop and implement an energy management system in order to reduce the organization's energy consumption. In evaluating the initial impacts of the standard, it can be determined that the standard is an important tool to implementing energy efficiency policies in the country, and holds many opportunities for industry and decision makers: economic savings, energy security of the implementing organization and environmental protection (for reducing emissions of local pollutants and global pollutants). In addition to the international review, the document contains a matrix of questions that will help to characterize correctly the contribution of the standard to the overall energy efficiency of a company or organization.

Project Leader: **Prof. Ofira Ayalon**

Project Team: **Tal Goldrath, Yaara Grinberg, and the Lev-On Group, California**

E. Society, Education, Health and National Resilience

Integration of the Ultra-Orthodox into Israeli Economy

A national program aimed at accelerating the integration of the Haredim population into the Israeli economy.

The project, which has been ongoing over the past two and a half years, incorporates research and application, its motto being that, "in order to affect policy, there is a need for a strong research backbone, but that research without application is futile and not beneficial."

The project has concentrated its activity in three main areas:

- **Military and Civic Service** (Military: mainly 'Haredim Service' programs e.g. 'Shachar'; Civic Service: participation in the National Civic Service)
- **Academic Studies** (in universities, colleges, regular and Haredi-specialized institutes)
- **Formal employment**

The project is active in various fields, mainly working with relevant government departments and agencies, including the Prime Minister's office (and The National Economic Council); Ministry of Industry, Trade and Employment; Treasury; Education; as well as the IDF.. Towards the end of the year the project completed an Annual Report, which summarizes the research work conducted so far, and formulates recommendations aimed at policy makers in various areas, regarding the integration of the Ultra-Orthodox community into Israeli life.

Activity:

- Participation in **Caesarea Conference** – examining the required policy with regards to young orthodox men, and recent government changes in policy.
- Organizing and producing a multidisciplinary **Seminar** on the subject, with many participants**, June 2011 – Jerusalem.**

- Establishing a '**Researchers Forum'**, with the aim of furthering the research activity being conducted in Israel on subjects related to the Ultra-Orthodox community.
- Establishing a '**Heads-of-College Forum'**, to promote, encourage and strengthen institutes offering academic training for the ultra-orthodox.
- Facilitating the collaboration of the **ORT College network** with **'Migdal Or' educational institutes** headed by **Rabbi Grossman.**
- Paper entitled **'Immigration Model'**, a national-strategic plan, describing the challenge of integrating the Ultra-Orthodox, drawing strategic parallels with **the integration of immigrants** in Israel. The significance of this mode of thinking is to leave no alternative for the state but to integrate the Haredim into the workforce. (See attached).
- A Working Paper regarding **'Young Haredim: an assessment for 2011 and three possible scenarios for 2021**
- **Success Stories –** collecting 100 success stories from within the Haredim world**, with the help of Moshe Berman and Haya Feder**, emphasizing the less known achievements and raising them to public awareness and to the awareness of decision makers.
- **The work of Mayan Shachaf and Yehuda Morgenstern regarding AMA"M –** a detailed study regarding the possibility of incorporating the study of the three core subjects **English-Math-Computers** into the Haredim educational system.
- **Participation in Shderot Conference** – conducting a panel on the subject of Haredim Integration including a central lecture by Dr Reuven Gal.
- Collating **Information for the Employer,** including an **'Employer Information Booklet'.** The work of **Hudi Zak**, aimed at streamlining the uptake of Haredim employees by potential employers.
- **Dr Reuven Gal appearance in the Trachtenberg Committee,** a committee set up to examine the social injustice agenda, brought to the fore by repeated mass protests of the Israeli public. Much of its recommendations stem directly from the project's Roadmap Report and Gal's appearance.

- Periodical **Distribution of a Newsletter and Selected Articles**, to an ever growing list of interested parties from employment, education, entrepreneurship, and others.

General:

During 2011 we have witnessed far reaching changes in the integration of the Ultra-Orthodox population into Israeli economy. While not exclusively responsible for all these changes, the results of the accelerated activity by the project team began to make its impact. There are reports of a marked rise in the number of Haredim students (a total of 6500 students), of success stores in the employment arena, and of a growing participation in the various IDF Shach"ar frameworks.

The Haredim Integration Project has gradually become one of the leading bodies carrying out the change. Thanks to a grant received from the Jewish Federation in New York (UJAFedNY), the team have been able to turn their attention to other areas of activity, namely **Information and Public Relations.**

The team:

Project leader: **Dr. Reuven Gal**
Assistant researcher: **Ilia Zatkovetsky**
Team members: **Yehezkiel Farkas**
Project Coordinator: **Moshe Papo**
Volunteers: **Hudi Zak**
Researchers of Success Stories: **Moshe Berman, Haya Feder**
Ama"m researchers: **Mayan Shachaf, Yehuda Morgenstern**

Appendix

A strategic plan to integrate the Ultra-Orthodox population into Israeli economy:

*The "Migration Model"

lsrael is perhaps the country with the richest experience in the integration of immigrant populations, economically and socially. In the past sixty four years, the State of Israel has absorbed many migration waves from various countries and from different backgrounds. The ratio between the number of immigrants and the host population size is the highest in the world – and so is the absorption success.

Israel experienced two large scale migrations ("mass migrations"): the first was during the three and a half years following the Declaration of the State of Israel (from May 1948 until the end of 1951), during which about 687,000 (196,000 per year, on average) immigrants arrived in Israel. Prior to this wave of immigration, the Jewish population in Israel numbered 650,000. The second mass immigration was of Jews from the former Soviet Union, during the years 1990-1997: about 710,000 Soviet immigrants (and approximately 110,000 Jewish immigrants from other countries) immigrated to Israel at a rate of about 200,000 immigrants per year. In order to absorb these waves of mass immigration, the government designed and carried out large scale initiatives, often above and beyond the needs of the time. This was especially noticeable in public residential construction, building schools, opening employment opportunities and public systems tailored to the characteristics of the immigrants.

***** Authors**: Dr. Reuven Gal,** Head of "Ultra-Orthodox Integration Project"
Ilia Zatcovetsky
From: "Integration of Haredim - Model, scenarios and maps" – Samuel Neaman Institute publication (in Hebrew).

Despite all the difficulties that accompanied and continue to accompany the absorption of immigrants, one can positively say, that the Israeli society is well versed with the absorption of immigrant populations with maximum efficiency and minimal adverse side effects.

Many characteristics of the Orthodox Jewish community allow us to treat it as a potential 'immigrant' group: they live, often, in segregated neighborhoods or cities; they all share a common lifestyle, general faith and world view; their patterns of behavior differ from the rest of the Israeli society, their education is not compatible with the Israeli labor market; Joining the Israeli society would entail a severe cultural shock; and so forth...

In recent years, there have been signs of a 'migration' within the Ultra-Orthodox community: initially, thousands of ultra-orthodox families left their traditional "territories" – *Mea-Shearim, Bnei-Barak,* etc. – and moved to new territories: *Elad, Modi'in Illit, Beitar Illit* and so on. Parallel to this we see an additional "aliya", or "migration": Young orthodox men and women gradually integrating into the labor market, academic studies, military service and civil volunteer service. This is, in fact, a physical, geographical, cultural and social migration process.

It should be emphasized: we are not suggesting treating the ultra-Orthodox community literally as immigrants! In many ways they are "Israeli veterans" more than most of us ... We do wish to point out, however, that the challenge facing us in integrating the ultra-Orthodox community into the Israeli economy and society is of the same type and magnitude -- and with some similar characteristics – as was the challenge faced by past Israeli governments in the field of immigration.

And yet **Israeli society, reputably successful in absorbing several waves of immigrants in the past -- repeatedly fails in the absorption of 'migrating' Orthodox Jews!**

There is **one major difference** between the “real” immigrants in the past and the ultra-Orthodox community, which is probably "responsible" for the success of immigrant absorption and the failure in the case of the Haredim:

The difference is that **in the case of the immigrants, there was no alternative but to absorb them.** In most cases, immigrants who come in large waves completely disassociate from their home countries, with no alternative of retreat, and their only option is absorption into Israel. The State, from its point of view, is unable to support a huge group of helpless immigrants over time without them standing on their own feet -- and therefore the only option is to bring them as swiftly as possible to a state of economical self-sufficiency.

In addition, the existence of a broad **public consensus** concerning the **criticality of the absorption** makes 'immigrant absorption' an important issue on the national agenda, allowing broad parliamentary and social support for somewhat exceptional measures taken to promote this goal.

In contrast, the attitude towards ultra-Orthodox integration into Israeli economy is different and perhaps even opposite. For decades - as a result of bilateral agreements and various political concessions -- a ***status quo*** was achieved that promised a reasonable standard of living to the orthodox community, without compromising the taxpayer's standard of living -- thus **orthodox labor market integration did not receive top priority, and was certainly not perceived as the only alternative**. True, many don't see the current *status quo* as a good alternative, but are willing to "continue to live with it".

Such a situation does not encourage long term generic solutions, instead encouraging temporary and "political decisions" that address daily pressing problems, complicating the matter even further.

The purpose of this document is to offer a political-strategic program for ultra-orthodox integration, presented within the framework of a strategic 'immigrant-absorption' model. The main significance of this model is the creation of a situation where the State has no alternative but to integrate the Orthodox community into the labor market.

Program outline

The followings are major principles that enabled the past success of Israel's migration absorption, and should characterize the future process of ultra-Orthodox integration into the Israeli society and economy:

1. "Absorption" of Haredim will be the only alternative to the policy makers.

Integrating the ultra-Orthodox population into the labor market will be the central goal declared by the Israeli government. The urgent need to bring this community to a state of economic independence will be the only default. All steps in determining the economic and social policies in relation to this population will be undertaken based on their contribution to this goal.

2. The government's approach will be systemic, covering all aspects of ultra-Orthodox absorption.

It is not feasible for different public bodies to manage independent policies concerning absorption, each by their own worldview and approach, at times taking actions which contradict with the efforts of the other. In addition, it is not constructive to determine policy in response to immediate needs, as identified by one ministry or the other. Rather, the overall policy should be proactive and well-coordinated.

3. The policies pertaining to the absorption of the ultra-orthodox community will be adapted to the nature of this public, without attempting to change their core beliefs.

Respect for another's lifestyle is a fundamental principle in a democratic society and a guarantee of success in a multi–cultural society. In Israel, past attempts to impose a 'uniform' culture caused severe damage to the absorption process during the migration wave of the nineteen fifties. Therefore, in order to succeed in the absorption of the ultra-Orthodox population, one must rid oneself of the desire to change, or "adapt", them into Israeli society. The goal is 'one' nation- not 'a uniform' nation. No "melting pot" policy – but a partnership between different cultural entities, creating a sum which is larger than its parts.

4. The Government will adopt a motivating fiscal policy to encourage entry into the labor market.

- Changing subsidy policy (as recommended by the Gabai Committee).
- Vouchers Program - providing incentive "vouchers", entitling the receiver to funded vocational training or partial funding of wages.
- Tax benefits for employers employing Haredi workers.

5. Modifying public bodies to the needs of the ultra-orthodox community.

- Adapting the standards of the Civil Service Commission to the characteristics of the Haredi community, so that the country's largest employer will be able to absorb thousands of Haredi workers.
- Adapting the military system, to be in a position to absorb thousands of Haredi soldiers into the IDF.
- Expanding the National Civil Service system to take Haredim, and improving the employment component in it.

6. **Encouraging professional and academic training amongst Haredim.**

   - Encouraging vocational / academic training institutes for Haredim – by increased funding and fiscal benefits.
   - Recognizing "Szold tests" as equivalent to *'Bagrut'* tests (Israeli mainstream high-school's matriculations).
   - Introducing EMC (English, Math and Computers) in the Haredi educational system.

7. **Establishment of an authoritative Coordinating Body ("Rashut") within the Prime Minister's Office**. (Regulatory Agency for Haredi Absorption Project)

Note: **Ultra-orthodox** is synonymous with **Haredi** or **Haredim**

Translated from Hebrew by Moshe Papo

Mathematics Without a Break

Integrating mathematical news snapshots in high-school mathematics

As of the last quarter of 2011 Neaman Institute joined the Israel Science Foundation in partial support of Mathematics Without a Break Project.

The ultimate goal of this Project is to decrease the gap between the ever-growing nature of mathematics and the stagnated nature of school curriculum by exposing high-school students to the rapidly growing area of mathematics, despite students' obvious lack of sufficient background to delve into its depth. The underlying assumption is that by perceiving mathematics as a creative human endeavor, more students may opt to consider a choice of their future career in mathematically-based occupation.

The proposed study *assumes to start with* that interweaving short Mathematical-News-Snapshots (abb. MNSs) in high-school mathematics lessons on a regular basis, is a fruitful way of introducing students to the ever-growing nature of mathematics without harming the progress in teaching the mandatory curriculum (based upon Amit's Action-research, Ph.D. thesis submitted Aug. 2011, Technion). Hence the main question that remains open is what needs to be done in order to make it happen by other teachers in the high-school education system. In other words, this study aims at the teaching force at-large, the mediators and agents of every change in the educational system, who are responsible for students' learning.

Two high schools of Ort were selected for the first year, in order to examine the feasibility of interweaving MNSs by an "ordinary" school team. Teachers and their students were asked to fill in a questionnaire prior to the beginning of the project and will be asked to respond to a similar one at the end of the school year. Implementation in schools started January 2012. Project staff will meet the school team on a weekly basis. Once a fortnight the school team will be introduced to a MNS, and will then take it to their classes. In the following week a reflection session will take place sharing experiences, and drawing lessons from them.

Project staff: **Prof. N. Movshovitz-hadar, Dr. B. Amit, Dr. A. Shriki, Mr. O. Zohar**.

Ort liaison: **Dr. E. Eisenberg, Dr. Leah Dolev, Ms. Yael Hen**.

The Martin and Dorothy Kellner Health Promotion Program

This is a community-based chronic disease prevention program targeted to impact positively on the known risk factors and thereby reducing the incidence, prevalence, and mortality from chronic diseases and consequently reducing the spiraling costs of health care, while promoting the health, productivity, and quality of life of the population. It is expected that a successful conclusion of the program will lead to a change in national health policies placing emphasis on disease prevention and health promotion.

The program will consist of a longitudinal field study in a medium-size Israeli town where an intensive and comprehensive program will be implemented on the individual, family, and community levels. The program falls in the realm of primary prevention which will focus on individuals at high risk for a physical disease, who have not yet been affected by the condition to be prevented. The objective of the field study is to demonstrate the effectiveness of the program in reducing high risk behavior such as smoking, obesity, poor nutrition habits, sedentary lifestyle and stress, in order to prevent such chronic diseases as high blood pressure diabetes, cancer, and cardiovascular diseases.

Over the past two years the first stage of the program has been completed in which the intervention program has been prepared in great detail by a team of experts. The preparation phase included among others: the formulation of the comprehensive intervention programs, selection of the communities (for intervention and for control), ethnographic studies, formulation of the questionnaires to be used for the baseline survey, media studies, telephone surveys, focus groups, documentations for submission to the Helsinki Committee (which must approve any research on human subjects) etc.

The preparation stage of the program has been assembled into a 1200 page two volumes book presenting the theoretical background, the result from the field studies, the methodological aspect of the program, the intervention protocols, budget and

timeline, and a battery of questionnaires designed to establish the baseline and outcome measures. This project is presently on hold.

Director of the Program in 2010 : **Prof. Manfred S. Green**

Project team : **Nehama Aviran, Prof. Oz Almog, Shiran Bord, Prof. Gerald Brook, Lilach Berkovitz, Dr. Anat Gesser-Edelsburg, Dr. Gary Ginsberg, Dr. George Ghrayeb, Dr. Rachel Dahan, Dr. Michael J. Dolgin, Riki Tesler, Dr. Naama Constantini, Dr. Shira Zelber-Sagi, Dr. Ciporah S. Tadmor**

Technological Innovation and its Adoption for Agriculture, Education and Sustainable Rural Viability.

Leader of this project: Dr. Ehud Gelb

A. Keynotes and facilitator

July, 2011 - Facilitator and Keynote lecturer at the 8th EFITA Conference, Prague. The invited Keynote was titled **"ICT Adoption Questionnaire: EFITA 2011 Summary".** An invited session discussion facilitator - one session titled **"Are Social Networks conducive to agricultural productivity"** and two sessions focused on ICT Adoption in Agriculture. The conference keynotes and discussions were shared with the parallel 8th WCCA, 8th ECPA, 5th ECPLF conferences.

December, 2011 - Facilitator and invited keynote lecturer at the 20th *European Seminar on Extension and Education in Aavaranta, Finland.* The keynote was titled ***ICT Adoption for Extension and Rural Education over the last 25 years – Insights in Perspective***

B. Electronic book – the e–Book titled *"ICT in Agriculture: Perspectives of Technological Innovation"* has completed it's sixth year in circulation - see **http://departments.agri.huji.ac.il/economics/gelb-main.html.** The e-Book is sponsored by the Neaman Institute, EFITA* and the Hebrew University's Center for Agricultural Economic Research. It was accessed in 2011 535028 times, 74% more than the 311287 times it was accessed in 2010 which in turn was double the 2009 rate. This public domain initiative introduces, promotes and shares insights, commonalities and constraints of ICT development and adoption for agriculture, education and the rural sector within a two decades long perspective. The e-book remains freely available on UNESCO's Open Training Platform http://opentraining.unesco-ci.org/cgi-bin/page.cgi?g=Detailed%2F2246.html;d=1
and is planned to be included in the newly onlined in the IBRD "ICT for Agriculture Source book".

C. Publications:

- Forward to forthcoming Springer's e-Book: ***"Agricultural Information and Communication Technologies in Future Farms***";
- Chapter titled ***"The EFITA ICT Adoption Questionnaire: Priority Indicators for the Future"*** in forthcoming e-Book: ICT for Agriculture, Rural Development and Environment Where we are? Where we will go?

D. Research partner in the follow up implementing the recommendations of the report "Israel 2028 – Vision and Strategy" with the Israeli Ministry of Agriculture and Rural Development.

E. Lecturer – ***"Strategies for the enhancement of the agricultural sector and its productivity: the Israeli experience*.** The Hebrew University, Faculty of Agriculture, Food and Environment, Division of External Studies.

*** EFITA – European Federation for Information Technology in Agriculture**

*** ESEE - European Seminar on Extension and Education**

Developing a Northern Biotechnologies Cluster in Israel
BioNorth

The S. Neaman Institute is leading an initiative to establish a **'Northern Biotechnologies Cluster in Israel'** incorporating all companies, incubators, start-ups and academy researchers in the north of Israel. The rationale for this initiative is that biotechnology has become the fastest growing industrial sector in Israel and worldwide, and is reshaping science, especially life science, medicine, food and agriculture. The decision to lead this initiative was taken after a survey conducted by the S. Neaman Institute indicated that biotechnology industries are usually develop the best as 'clusters' in the vicinity of academic institutes and successful biotechnology researchers.

In order to promote this initiative, the S. Neaman Institute has organized meetings of leading scientists in the area, including scientists from the academy as well as leading personnel from companies located in the North. The main goal of those meetings was to bring together all forces involved, enabling them to develop close professional relations, and to determine the best organizational structure for the Northern Cluster.

As a result of those meetings a "Biotechnology Communication and Information Network" was established, and the www.bionorth.org.il went on air on April 2004.

That website has been developed and up-dated daily since then bringing together efforts of five different organizations which have contributed to the site:

1) The Haifa Economic Corporation Ltd;
2) The Technion, Israel Institute of Technology;
3) The Rappaport Institute for Research in the Medical Sciences;
4) Rambam Health Care Campus;
5) S. Neaman Institute for Advanced Studies in Science and Technology;

The www.bionorth.org.il is designed to serve as an "Interactive Live Network" for all forces involved in biotechnology fields in this region, and to promote communication and synergy among its participants, encourage development in biotechnology sciences, and make a positive impact on the economy of Northern Israel.

In addition to the BioNorth web-site a series of seminars on focused topics of interest started at the end of 2006 and have been conducted since then.
Those meetings involve investigators and leading researchers from academy and industry.

The first symposium was held at Neaman Institute on December 28th, 2006 on the subject of: 'Novel technologies for improving food quality & safety'.

24 different meetings (all together) have been held since then during the last five years. More than 1000 people attended those meetings enabling investigators and leading researchers from academy and industry to meet together and to discuss mutual subjects of interest.

The 5 seminars held during the year of 2011 were:

31.03.2011 – 'Neuro-Technologies and Engineering'.
20.06.2011 – 'Medical Ultrasound Innovations in Israel'.
10.11.2011 – 'Food Vision for 2020'.
01.12.2011 – 'Electricity extraction by Bio-Technologies processes'.
22.12.2011 – 'Synthetic Bio-Technologies'.

The purpose of those meetings is to present different researches, developments, as well as experiences learned in the academy and industry, by bringing together scientists from academy with leading researchers from industry, to discuss mutual subjects of interest in-order to promote communication and synergism among them.

During January 2012th the BioNorth Steering Committee, chaired by Prof. Yuval Shoham from the Faculty of Biotechnology and Food Engineering decided not to prolong the project and perhaps a different format will be applied to this activity.

Project Leader: **Dr. Abraham Rotem**
Head of steering committee: **Prof. Yuval Shoham**
With assistance of: **Bella Zalmanovich** and **Golan Tamir**

People-Israel Project - www.peopleil.org

Background

People-Israel (www.peopleil.org) is a popular sociological and pedagogical webzine that provides comprehensive up-to-date multimedia scientific information on Israel's major social phenomena, subgroups, cultures and lifestyles.

Apart from supplying useful information on the Israeli diverse society, we had two additional goals: (1) To develop a new model for researching, documenting and learning of multicultural societies across the globe. (2) To reduce prejudice and stereotyping in Israeli society, and to promote peace, tolerance and understanding among groups with different cultures and lifestyles.

The in-depth treatment afforded to each "tribe" in the People-Israel's database is intended to convey the symbolic message that every culture and lifestyle is of equal social standing and that the country's identity is a social blend.

UNESCO (the United Nations Educational, Scientific and Cultural Organization) has recognized the People-Israel webzine as an innovate development in the research and study of multiculturalism and is helping develop and spread the site as a model for additional countries.

Achievements for 2011

1. We've have developed a new socio-educational platform (feature) for the homepage: A Cultural Calendar. The calendar consist of updated information (text and visuals) on diverse events/happenings (mostly cyclic and with mass participants) in the Israeli Society, such as art, science, sport and religious events, holidays, conferences, festivals, ceremonies and memorial days.

The compilation of cultural events reflects the Israeli cultural diversity and promotes cultural knowledge and tolerance.

2. The highlight of our scientific-ethnographic efforts this year was the completion of the project on Communities and Synagogues in Israel. We have documented in text and visuals 100 synagogues across Israel, each with a special story to tell.

In March 2011 the project was presented at a conference at the University of Haifa, and an extensive photograph exhibition was displayed in the university lobby.

3. The Spirit of Israel Gallery (established at the end of 2011) is a joint initiative of the University of Haifa Arts Committee, the School of Arts in the Humanities Faculty, and the webzine People Israel - A Guide to Israeli Society www.peopleil.org, sponsored by the UNESCO Chair for the Research and Study of Cultures through the Internet at the University of Haifa and by the Samuel Neaman Institute. The digital gallery hosts ethnographic and artistic photographic exhibitions, with a focus on historical and present-day phenomena in Israeli society.

4. The site continues to grow, not only in the number of the articles and the size of the photo corpus, with its breathtaking galleries, but also in the rate of growth. As of the end of December 2011, the site included around 530 articles on a variety of topics, an increase of 100 articles compared to the previous year. Another 30 articles are in the pipeline. Furthermore, 64 "Israeliana" albums and 182 albums of ethnographic photos have been added, with another 40 albums in the pipeline.

5. The Cultural Calendar, the increase in the number of articles and photos and the impact of the project explains the rapid increase in the number of visitors at the site: around 1700 per day, representing an increase of 70% compared to last year.

6. We gave a 7-days custom made training course on Ethnographic Photography to a group of 24 sergeant majors. The IDF had purchased five professional cameras specifically for the pioneer training. The participants documented the Musrara multicultural neighborhood at Jerusalem. The outcome was beautiful photo albums which are currently displayed on People Israel site. The conclusions drawn from this successful training course will be applied in 2 consecutive courses planned for 2012.

7. In the fall semester of the 2011/12 academic year, we offered for the second time an all-university course for outstanding students titled People-Israel Staff. The purpose of the course is to give Haifa University students a taste of what it is like to work on the People-Israel site and at the same time to help us operate and promote the site.

8. During the 2011/12 academic year, a graduate seminar on Cultural Diversity in Education Systems through the Internet was offered for the second time in the Faculty of Education at the University of Haifa. The course - based on People-Israel - was taught by Dr. Tamar Almog. The best papers in the course will be posted on site.

9. Cooperation between People Israel and Osem-Nestle Company yielded a photo exhibition titled "moments of coffee". The exhibition provided a socio-visual reflection on the coffee drinking habits of the Israelis.

10. Cooperation with Zim's archives yielded a scan of thousands of historical images, related to Zim's passenger ships - Israeli nostalgia that is now presented to the public for the first time on our site (25 photo albums). The photos will be presented next year in our University digital gallery.

11. People-Israel was presented in a panel at the 3rd Israeli conference on the study of contemporary spiritualties titled: Israeli Judaism Today – A Session Combining Visual Documentation from the "People Israel – the Guide to the Israeli Society" Project.

12. Dr. Tamar Almog was invited to give a talk in Hong Kong’s Baptist University. The title was: e-learning & m-learning for generation Y - the Israeli case (People Israel site was the main topic of the presentation).

Leading the project : **Prof. Oz Almog and Dr. Tamar Almog**

Affordable Housing: Developing Policy, Awareness and Pilot Projects

Background:

Housing affordability, or the lack of it, was the issue that sparked the mass social protests of Summer 2011, with tent camps in tens of cities and hundreds of thousands of demonstrators. Families are considered to be in 'housing distress' in developed countries when expenses for housing consume more than about a third of their income, and in 'severe housing distress' when housing costs rise above half of income. Israel still doesn't have numbers on the proportion of families who are in housing distress, or any demographic analyses of who these families are, where they live, and what basic needs they are foregoing in order to keep a decent roof over their heads. But, with housing costs rising far above the increases in wages, middle-class families and fully employed working people are strongly feeling the crunch, alongside those whose social benefits and housing allowances have been reduced dramatically, by as much as half, over the past decade. Very high housing costs have severe social impacts, including contributing to increased segregation, concentration of poverty, and reduced social mobility.

This project works to develop new policies to promote affordable housing and social mixed neighborhoods in Israel. We draw on the experiences of other developed countries in creating new tools of regulatory planning and financial innovations, and seek to adapt and transmit these policies for use in Israel. Israeli housing policy used many similar instruments in the early years of the State.

Today, however, national government policy alone is not sufficient: government policies require cooperation by local authorities, the private sector and civil society. In 2011, we worked closely with all these sectors, using the 'open-window' of the social protests to strengthen understanding of the topic, and to advance legislation and policies. A particularly effective avenue came with the opportunity to chair the team of experts advising the social protest on issues of housing, transport and planning.

The project works to train key actors in public sector, civil society, and the private sector. Activities from 01/2011- 12/2011 included:

- Publications and position papers: The major publication was the "Spatial Policy for Social Justice' report presented to the social protest and to the government, as an

alternative to the government-sponsored Trachtenberg report. The report is the first attempt to show how spatial planning in Israel - including housing, transport and land-use policies -- can be reformed to enhance social justice. The report was written jointly by a team of over fifty academics from universities across the country, and we were able to devote ourselves full-time to writing, editing, and chairing the expert team. We also worked closely with various organizations who produced position papers on affordable housing, including: the Union of Local Authorities in Israel; the National Union of Israeli Students; the Israel Planner's Association; and the Coalition for Affordable Housing.

- Training and workshops: We trained about forty lecturers and facilitators who delivered over a hundred lectures at tent camps throughout the summer. Training sessions were sponsored by the Israel Planners Association and by the Coalition for Affordable Housing. We worked closely with the Coalition for Affordable Housing to prepare accessible public materials, distributed in the tens of thousands at the tent camps. We are continuing to work closely with the social protest leaders in preparing their campaign on national reform for sociable housing policies.
- Presentations and briefings: We presented topic briefings on affordable housing to the National Planning and Building Committee, the Ministry of Justice, and Ministry of Interior district planners (together with Prof. Rachelle Alterman and Dr. Chaim Fialkoff); addressed sessions of the Knesset Committee on Interior and Environment, and the Knesset Committee on Economics; and gave lectures at public conferences and in academic settings including at Hebrew University, Tel Aviv University, the Technion, Bezalel, and the Association for Civil Rights in Israel, Van Leer, the Green Building Council, Merhav - Movement for Israeli Urbanism, the Heschel Center for Leadership on Sustainability, Planner's Association and the Geographer's Association and SICUII.
- Media: The national spotlight on housing brought many opportunities for media coverage. Our work was cited in numerous newspaper articles, and we published op-ed pieces in the Marker (2)[1], Calcalist (2)[2] and the Jerusalem Post[3] and spoke frequently on

[1] TheMarker – 15.7.11:"The social role of the ministry of housing and construction"
TheMarker- 22.7.11:"The tent protest as a new social concept"
[2] Calcalist – 25.8.11:"Everybody wants quality life like in Tel-Aviv"
Calcalist – 30.1.12:"Is a 2 room's apartment at a price of 2 million shekels considered 'affordable housing?' "
[3]The Jerusalem Post – 27.7.11: " Analysis: Winds of change?"

radio and on television. Many of these, along with other articles, can be found at the Coalition for Affordable Housing.

Project Outcomes: Outcomes are, of course, a result of the work of many individuals and institutions. Below we survey the new initiatives in housing policy on which our work had direct bearing:

- Draft legislation on affordable housing: at the end of 2011, the Government submitted draft legislation on affordable housing to the Knesset Committee on Interior and Environment, to be included in the national planning reform legislation. The proposed legislation provided a legal definition of affordable housing, authorized municipalities to zone land for affordable rental housing, and set out a mechanism for monitoring and managing affordable housing units. Strikingly, the proposed definition did not explicitly authorize intervention to reduce the cost of housing, nor did it require an income test for eligibility. Following public outcry and at the insistence of MKs, the Prime Minister's Office is now reviewing the proposed legislation.
- Policy on new public housing: The Minister of Housing is calling for a new policy to include 5% public housing in all new build on Israel Lands Authority plots: this would constitute a most significant advance in legislation, assuming allocation of funding.
- Regulations: the Ministry of Interior has released new policies for including smaller homes in all new build, and for permitting sub-divisions of homes subject to municipal planning permission, following recommendations from our 2010 research with Prof. Rachelle Alterman of the Technion.
- Pilot Projects: Municipalities and community groups throughout the country are advancing pilot projects that aim to make housing more affordable to local residents, and typically include a mix of both market-rate and sub-market rate homes. We worked closely with several of these projects, primarily in the Haifa and Tel Aviv areas, and helped to secure funding for a research project mapping the new initiatives: their characteristics, obstacles, and needs for assistance. The mapping project is designed as a gateway to securing long-term funding for technical assistance to pilot projects, particularly those with a strong community involvement and a commitment to social mix.

The project is managed by **Dr. Emily Silverman,** in cooperation with **Prof. Naomi Carmon** and urban planner **Hagit Naaly Yosef** (until July 2011).

F. General

Seminars, Workshops and Conferences during 2011

Samuel Neaman Annual Lectures:

The 8th Samuel Neaman Annual Lecture - 6.1.2011

Speaker: **The author Amos Oz**

Subject: His book - **"A Tale of Love and Darkness"**

The 9th Samuel Neaman Annual Lecture - 21.11.2011

Speaker: **Prof. Haim Harari**

Subject: **From Basic Research to Economic Power – Remarkable Journey and Fascinated Adventure.**

Higher Education Forum Meetings :

Higher Education Forum No. 18 – 7.1.2011

Meeting on the subject: **"Integration of the Social & Geographic periphery in Higher Education**"

Lecturers: **Prof. Dan Ben-David,** Executive Director, Taub Center for Social Policy Studies in Israel; **Itzik Turjeman**, VP for Promotion of Excellence, Rashi Foundation, in the past - founded and directed the Atidim Program; **Prof. Moshe Mandelbaum**, Council for Higher Education; **Etti Konor-Attias**, Adva Center – Information of Equality and Social Justice in Israel.

Higher Education Forum No. 19 – 18.2.2011

Meeting on the subject: **"academic Independence & Autonomy in Institutes of Higher Education**"

Lecturer: **Prof. Amnon Rubinstein**, Interdisciplinary Center (IDC) Herzliya.

Higher Education Forum No. 20 – 6.5.2011

Meeting on the subject: **"The Haredi Community in Higher Education**"

Lecturers: **Prof. Ithamar Gruenwald –** Tel Aviv University, "Bashaar"; **Rabbi Yehezkel Fogel**, Director of the Ultra Orthodox Campus, Ono Academic College; **Prof. Judith Gal-Ezer** – Vice President for Academic Affairs, The Open University; **Prof. Joseph Bodenheimer** – Former President of Jerusalem College of Technology; **Mrs. Adina Bar-Shalom**, Chairwoman – Haredi College.

Workshop on **" The Question of Concentration in the Israeli Private Sector"** – December 30, 2010

The mission of the workshop was to explore the allocation of financial assets of the Israeli public . Two subjects were discussed at the workshop: (a) "The question of control of holding companies over financial institutions", chaired by **Mr. Guy Rolnik** (The Marker). Panelists: **Prof. Amir Barnea**, **Mr. Daniel Doron, Adv. Yehuda Talmon, Prof. David Levhari and Mr. Ami Zadik** . (b) "The question of pyramidal structure and the discrepancy between capital and control", chaired by. **Dr. Shlomit Zuta**. Panelists: **Prof. Glen Yago, Prof. Yishay Yafeh, Mr. Konstantin Kosenko, Adv. Dror Strum and Mr. David Boaz**. After the presentation and discussion of the panelists, the audience participated in the discussion. The video can be viewed on our SNI web site.

The 2nd SNI workshop on the Concentration in the Israeli Economy was held on Feb. 6th 2012 (see our website).

Ultra-Orthodox Integration Conference – Neaman Institute, (June 2011), Possible ways of integrating the Haredi population into employment, higher education, and Israeli Society.

Lecturer: **Dr. Reuven Gal**

BioNorth Workshops :

Bio-North workshop on – 'Neuro-Technologies and Engineering'- 31.03.2011
Lecturers: **Prof. Shy Shoham , Prof. Yael Hanin , Prof. Abraham Zangen, Prof. David Yarnitsky , Dr. Imad Younis .**

Bio-North workshop on –'Medical Ultrasound Innovations in Israel'- 20.06.2011
Lecturers: **Prof. Dan Adam , Dr. Yoram Eshel , Michael Kardosh , Shmuel Ben-Ezra, Prof. Uri Rosenschein, Dr. Yoav Medan, Prof. Eitan Kimmel Prof. Hiam Azhari**.

BioNorth workshop on 'Food Vision for 2020'- 10.11.2011
Lecturers: **Prof. Eyal Shimoni, Dr. Gila Rozen, Mr. Haim Wilder, Dr. Yoav Livney**.

BioNorth workshop on 'Electricity extraction by Bio-Technologies processes'- 01.12.2011
Lecturers: **Prof. Gadi Schuster, Dr. Dror Noy, Dr. Yoram Gerchman, Dr. Itai Carmeli.**

BioNorth workshop on 'Synthetic Bio-Technologies' - 22.12.2011
Lecturers: **Dr. Roee Amit, Dr. Doron Gerber, Prof. Ron Milo, Dr. Amir Aharoni**

Water Forum Meeting:

The second forum was held at the Technion on March 8th, 2011. Nearly 100 scientists, field experts and policy experts participated in the Forum. The subject of the meeting Water in Agriculture was discussed in two sessions:

1. The management interface between the water market and agriculture
2. Regulation

At the end of the day, a concluding meeting was held with a Panel of experts. Following the Forum meetings, a report of proposed policies for the Water Authority was published. It includes key recommendations for implementation. The report

summarizes the key issues raised during the Forum including recommendations regarding the implementation of the session's conclusions.

Energy Forum Meetings :

Energy Forum #20: Grid-connected photovoltaic systems for the residential and commercial sectors - February 14th 2011

Energy Forum #21: Energy-saving retrofit of buildings - May 16th 2011

Energy Forum #22 on Nuclear Power Plan in Israel - November 14th 2011

Energy Forum #23 on Wind Energy in Israel – December 19th 2011

Environmental Protection -

Conferences-Organization and Participation

Tal Goldrath, 29-30 December, 2010, Science Technology and Society in Israel Workshop, Sde Boker, "Climate Change Policy in Israel - Update."

Tal Goldrath, March 6, 2011, Symposium as part of the Green Campus, "The Caramel - Restoration Policy after the fire in December."

Tal Goldrath, May 30, 2011, Be'er Sheva University. "Greenhouse Gases in Israel – from policies to implementation"

Tal Goldrath, June 13, 2011, Green Campuses Conference, Haifa University. Marketing, branding and green consumerism on campuses.

Tal Goldrath, June 19, 2011, Symposium as part of the Green Campus, "Impacts of Natural Gas entering through Haifa's bay."

Prof. Ofira Ayalon, June 27, 2011. The annual conference of the Israeli Society for Ecology and Environment, "Biospheric Spaces and Global Changes" Megiddo Regional Council.

Tal Goldrath, June 27, 2011. The annual conference of the Israeli Society for Ecology and Environment, "Biospheric Spaces and Global Changes" Megiddo Regional Council. Presenting the National Plan for Greenhouse Gas Mitigation.

Prof. Ofira Ayalon, 5 July, 2011. The Israeli policy for GHG mitigation, "Policy and GHG mitigation- Energy Efficiency from Theory to Practice". Cleantech 2011, Tel Aviv. Keynote and

moderator

Prof. Ofira Ayalon, 6 July, 2011. "Economic and environmental aspects of the Israeli packaging law". Cleantech 2011, The 3rd Recycling conference, Tel Aviv. Keynote and moderator

Prof. Ofira Ayalon, November 1-2, 2011. Presentation on: the National Greenhouse Gas Emissions Priorities Document. The Center for Natural Resources Conference, Haifa University.

Prof. Ofira Ayalon, November 7, 2011. Presentation on: Utilizing waste as an Energy Resource. The Jerusalem Conference for Environment and Nature: Designing an Environmental Policy for Israel.

Dr. Miriam Lev-On, November 7, 2011. Presentation on: Regulatory Issues of Oil and Gas Production in the Sea: the International Perspective. The Jerusalem Conference for Environment and Nature: Designing an Environmental Policy for Israel.

November 8, 2011. Awards Ceremony for Companies Participating in the Greenhouse Gas Emissions Registry. Tel-Aviv.

Tal Goldrath received the certification awarded to the Technion for reporting in 2010.

Prof. Ofira Ayalon, December 11, 2011, Israel Business Conference 2011. Participated in a Round Table on the Topic of Renewable Energy in Israel.

Prof. Ofira Ayalon, December 21, 2011. Sustainability Conference 2011, Haifa. Moderator.

Tal Goldrath, December 21, 2011. Sustainability Conference 2011, Haifa. Presentation on: Bay of Haifa Development Indices.

Foreign Guest Lectures at the Samuel Neaman Institute:

"Governance, Innovation, Globalization and Economic Growth in China"

Lecturer: **Prof. Dan Breznitz,** Faculty of Management, Sam Nunn School of International Affairs at the Georgia Institute of Technology – 15.6.2011.

Active Participation in International Conferences

Prof. Ofira Ayalon 5-7 January, 2011, 7th Intrntnl. Conference on Environmental Cultural, Economic and Social Sustainability, Hamilton, New Zealand. "**The Role of Governments in Promoting Low Carbon Technologies".**

Prof. Ofira Ayalon, October 27, 2011. CIGRE conference **"Long power lines and electricity connection between countries: strategic needs, environmental and social impacts.**" CIGRE- CONFÉRENCE INTERNATIONALE DES GRANDS RESÉAUX ELECTRIQUES

Perry Lev-On, 16-17 November 2011, A&WMA International Conference GHG **Strategies in A Changing Climate**, San Francisco, California, USA.

Dr. Reuven Gal lectured in the following conference:

The International Biennial Conference of the Inter-University Seminar on Armed Forces and Society, Chicago, Illinois (21 - 23 October, 2011)
Presentation: Social Resilience at times of protracted crises: The Israeli case-study.
Also, Chairing a Symposium: A Multi-Perspective Discussion about National Resilience.

Dr. Ehud Gelb lectured and contributed to the following activities:

- July, 2011 - Facilitator and Keynote lecturer at the 8th EFITA Conference, Prague. The invited Keynote was titled **"ICT Adoption Questionnaire: EFITA 2011 Summary".**
- December, 2011 - Facilitator and invited keynote lecturer at the 20th European Seminar on Extension and Education in Aavaranta, Finland. The keynote was titled **ICT Adoption for Extension and Rural Education over the last 25 years – Insights in Perspective**.

Active Participation in Israeli Conferences

Main Lectures and seminars are run or directed by Dr. Gilead Fortuna:

March 2011 - Lecture in a meeting with NASA aerospace industries in Jerusalem.

April 2011 – Leading and coaching a Pan European panel on national policy for innovation, Seminar organized by the Hungarian Embassy.

April 2011 - Guest Professor Bramachari, Director of Science and National Research Institutes in India, to upgrade the life of the rural population.

September 2011 - View personal experience to build students' science project at the construction status of World WIZO president and directors of the Haifa Municipality and Ministry of Education, part of a project encouraging science education in high schools.

September 18, 2011 – Lecture on the options for promotion national policy for implementing and leveraging Cleantech industry in the Negev, to the OECD delegation.

November 18, 2011 - MBA course lecture at Haifa University on doing business in China Policy and practice.

November 2011 - Presentation to the government led by Director General, Ministry of Trade and Industry on the options to the chemical industry based on natural gas.

November 2011 - Presentation on the water project WATEC Exhibition Grounds meeting (with Shiri Freund - Koren).

December 2011 - Industrial production of green table green and green innovation - leading presentation at the request of the Ministry of Trade and Industry.

June 2011 - Invited lecture at the Society of Chemical Engineering. Chemical industry policy based natural gas.

Education Project - participation in initiating, steering and professional meetings on science education in high school steering team companies and guidance to the project designed to encourage and promote science education in high school. Topic started in 2011 and drew in 2012.

Establishment of industrial parks legendary Galilee - active participation in administrative and industrial parks brainstorming. Several meetings during the year including meetings with industry and parks and government.

Dr. Daphne Getz, Prof. Uri Kirsch and **Prof. Zehev Tadmor:**
Participated in the Annual Globes Business Conference, 11.12.11 – "Technological Differences" Round Table Session, on our work: **"A comparative study on the scientific and technological research in Israel and some middle eastern countries, using quantitative indicators"**

Dr. Reuven Gal lectured in the following conferences:

- **Caesarea Conference:** The forgotten age group in Haredi society, Young Haredim (19-20 June, 2011), Reuven Gal, Gilad Malach
- **Sderot Conference on Israeli Society:** Integration of Haredim into employement. (29-30 November, 2011)
- **Foundation Conference, the Association of Military/Social Researchers** (14-15 December, 2011)
    1. National/Social Resilience in Israel during the second intifada (Palestinian uprising)
    2. Military service and Civil service – two sides of the same coin?

The Samuel Neaman Institute website

WWW.NEAMAN.ORG.IL

This website serves both as an information center about national policy studies in Israel and as a home for the Samuel Neaman Institute's activities. The website allows its visitors to read and download all of the Institute's publications since 1987, and view the variety of activities that the Samuel Neaman Institute is leading. Registration for the conferences organized and led by the Samuel Neaman Institute can also be done on the site. The website appears in Hebrew and English and is updated regularly, thus exposing the Samuel Neaman Institute to professionals and the general public.

In 2011, we launched a new website in Hebrew. The new website has an advanced user interface.

On the new website personal activities of each of our researchers can be viewed as well as publications and professional appearance at conferences and press.

During 2012 we will launch an identical site in English, and open a new YouTube channel.

Lectures uploaded in 2011, which can be watched on the website:

- Prof. Haim Harari - From Basic study to economic power - a wonderful journey and an exciting adventure
- Lecture by author Amos Oz about his book: "A Tale of Love and Darkness"
- The Higher Education Forum Meeting- Number 18, January 07, 2011 - Integration of the Social & Geographic periphery in Higher Education.
- The Higher Education Forum Meeting - Number 19, February 18, 2011 - Academic Independence & Autonomy in Institutes of Higher Education.
- The Higher Education Forum Meeting - Number 20, May 06, 2011 - The Haredi (Ultra- Orthodox) Community in Higher Education.
- Affordable Housing- Dr. Emily Silverman

About 63% of the visitors in 2011 are new visitors. Average visit duration on the site is 3:19 minutes.

On our Facebook page http://www.facebook.com/NeamanInstitute, you can be updated on future events, news articles, new publications and respond to any publication or news article.

Chief Information Officer: **Golan Tamir**

List of Publications for 2011

(Can be downloaded from the SNI web site WWW.NEAMAN.ORG.IL)

Title	Authors
Needs and priorities in the Haifa bay development towards a balanced prosperity	Ofira Ayalon, Tal Goldrath, Yael Rozenfeld
Nuclear power station in Israel - Summary and recommendation of the SNI energy forum	Prof Gershon Grossman, Tal Goldrath
Green Aviation – Literature Survey	Yehuda Hayuth, Orly Nathan, Ortal Faibushenko, Ofira Ayalon
Evolutionary Interpretation of VC Policy in Israel, Germany, UK and Scotland (STE-WP-45)	Gil Avnimelech, Alessandro Rosiello, Morris Teubal
Energy-saving retrofit of buildings - Summary and recommendation of the SNI 21st energy forum	Gershon Grossman, Tal Goldrath
Grid-connected photovoltaic systems for the residential and commercial sectors - Summary and recommendation of the SNI 20th energy forum	Gershon Grossman, Tal Goldrath
A comparative study on the scientific and technological research in Israel and some middle eastern countries, using quantitative indicators	Yair Even-Zohar, Daphne Getz, Uri Kirsch

The National Science and Technology Policy of Israel	Zehev Tadmor
National Environmental Priorities of Israel, Position Paper VII : greenhouse gases mitigation plan in Israel, 2011	Ofira Ayalon, Tal Goldrath, Michal Nachmany, Miriam Lev-On, Perry Lev-On, Gad Rosental
PLANNING THE FUTURE: Annual Report 2010 Samuel Neaman Institute	Neaman Institute
R&D Outputs in Israel 1990-2008: Israeli Patents in an International Perspective Extended Summary	Daphne Getz, Eran Leck, Orly Nathan-Shats, Yair Even-Zohar, Amir Hefetz
Israeli R&D Output: international comparison of scientific publications Extended Summary	Daphne Getz, Yair Even-Zohar, Bella Zalmanovich, Eran Leck
Excellence Evaluations of the Universities in Israel â€“ Approaches, Issues and Achievments	Uri Kirsch
R&D Outputs in Israel 1990-2008: Israeli Patents in an International Perspective	Daphne Getz, Eran Leck, Orly Nathan-Shats, Yair Even-Zohar, Amir Hefetz
Mapping of National Research Infrastructures in Israel	Daphne Getz, Dan Kaufman, Nir Ben-Aharon, Vered Segal, Bella Zalmanovich, Yair Even-Zohar, Ella Barzani, Reut Marciano
Evaluation of the NOFAR Program	Daphne Getz, Vered Segal, Eran Leck, Iris Eyal

Israeli R&D Output: international comparison of scientific publications	Daphne Getz, Yair Even-Zohar, Bella Zalmanovich, Eran Leck, Gideon Czapski

Publications that did not appear in the annual report of 2010

Energy Efficiency in lighting systems - Summary and recommendation of the SNI 19th energy forum	Gershon Grossman, Tal Goldrath, Michal Nachmany
TOD - Transit Oriented Development Urban Planning around Accessible Rail Transit	Dan Gat, Yehuda Hayut, Peter Katz, Shlomo Maital, Yodan Rofe
National Energy Technologies Research and Development Survey	Ofira Ayalon, Michal Nachmany, Tal Goldrath, Daphne Getz, Vered Segal, Eran Leck, Yifaat Baron

Other Publications

Prof. Ofira Ayalon writes also for the popular press. She writes for The Marker and for Globes, business dailies, as well as Ynet (the most popular daily in Israel) and NRG. More than a dozen columns were published during 2011. Her columns cover updated environmental issues as climate change, waste management issues and environmental behavior.

Prof. Shlomo Maital writes also for the popular press. His column "Marketplace" appears in every issue of the Jerusalem Report, a fortnightly magazine with large circulation among American Jewry. Some 26 columns were published during 2011. Prof. Maital also wrote for The Marker and for Globes, business dailies. He also writes a blog, timnovate. wordpress.com, with entries almost daily, on the global economic crisis and on innovation and creativity.

"Towards Mapping National Innovation Ecosystems: France's Innovation Ecosystem". Amnon Frenkel, Shlomo Maital, Eran Leck. Also: "Poland's Innovation Ecosystem"; "Spain's Innovation Ecosystem"; Germany's Innovation Ecosystem"; "Israel's Innovation Ecosystem". SNI: 2011.

"Like Some, Like All, Like None: A Comparison of Five National Innovation Ecosystems, With Emphasis on Markets & Demand" (Work Package 2) . Prof. Amnon Frenkel, Prof. Shlomo Maital & Dr. Eran Leck.

Innovation Policies: An Integrative Systems-Based Review of Research Findings With Emphasis on the Role of Markets & Demand. Amnon Frenkel, Shlomo Maital & Eran Leck.

The Technion's Contribution to the Israeli Economy through its Graduates, By Amnon Frenkel and Shlomo Maital. A Scientific Report Submitted to the Technion Board. An SNI Research Paper.

Ultra-Orthodox Integration Project Activities in the press:

- **"Young Haredim: 2011 Assessment and three possible scenario's for 2021",** Ultra-Orthodox Integration Project (19/6/2011)

- **"A Haredi group opposes drafting of yeshiva students to Civil Service"**, 'Haifa News', (12/8/2011)
- **"Where are the Haredi in the social protest?"**, 'De Marker' (21/8/2011)
- **Reuven Gal: "The Haredim abroad work for their living"**, 'mako'**,** http://www.mako.co.il/news-military/politics/Article-dde8860496af131017.htm (24.8.2011)
- **"Committee debate: Who is to blame, the Haredim or the State?"**, 'To Know – the first Haredi portal', http://ladaat.net/article.php?do=viewarticle&articleid=12919(24.8.2011)
- **"Researchers participated in a forum dealing with minimizing differences between Ultra-Orthodox and non-orthodox**", 'Haifa News', (19/10/2011)
- **"The Slow Haredi Revolution"**, Prof. Shlomo Maital / Marketplace, (Jerusalem Report 20/11/2011)
- **"Zichron Deliverance"**, 'Gefen' (9/12/2011)

Newspaper articles by Dr. Reuven Gal:

- **"Reuven Gal: Don't cancel 'Tal Law'"**, http://www.haaretz.co.il/opinions/1.1163941 'Haaretz', (25/2/2011)

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Technion

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Technion

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Internal Auditor

Mr. Yehezkiel Wolfsthal

Research Fellows, Project Managers and Project Coordinators

Prof. (Eme) Yoram Avnimelech
Senior Research Fellow
agyoram@technion.ac.il

Prof. Ofira Ayalon
Senior Research Fellow and
Environmental Projects Coordinator
ofira@sni.technion.ac.il

Prof. Oz Almog
Senior Research Fellow
Head of People Israel Project
oalmog@univ.haifa.ac.il

Dr. Tamar Almog
Senior Research Fellow
Head of People Israel Project
talmog@univ.haifa.ac.il

Prof. Gideon Czapski
Senior Research Fellow
czapski@vms.huji.ac.il

Prof. Miriam Erez
Israel Prize Laureate on the Study of Administration Sciences
Senior Research Fellow
merez@ie.technion.ac.il

Dr. Gilead Fortuna
Senior Research Fellow
Head of the Project "Vision and Strategy for Israel"
gfortuna@sni.technion.ac.il

Prof. Amnon Frenkel
Senior Research Fellow
amnonf@technion.ac.il

Dr. Reuven Gal
Senior Research Fellow
Head of the project "Integration of the Ultra-Orthodox Population into the Israeli Labor Force"
reuvgal@sni.technion.ac.il

Dr. Ehud Gelb
Senior Researcher
gelb@agri.huji.ac.il

Dr. Daphne Getz
Senior Research Fellow
Manager of the Data Center of Samuel Neaman Institute
daphne@sni.technion.ac.il

Prof. Gershon Grossman
Senior Research Fellow
Head of SNI Energy Forum
grossmng@technion.ac.il

Prof. Yehuda Hayuth
Senior Research Fellow
Head of National Infrastructure Project
yehuda@sni.technion.ac.il

Prof. Uri Kirsch
Senior Research Fellow
kirsch@tx.technion.ac.il

Dr. Eran Leck
Researcher
leck@sni.technion.ac.il

Joseph Linhart
Consortium Program Coordinator
lyosef@sni.technion.ac.il

Prof. Shlomo Maital
Senior Research Fellow
smaital@tx.technion.ac.il

Prof. Nitsa Movshoviz-Hadar
Senior Research Fellow
nitsa@technion.ac.il

Prof. Dan Peled
Senior Research Fellow
Head of the Economy and National Security Forum
dpeled@econ.haifa.ac.il

Dr. Abraham Rotem
Researcher
rotem@sni.technion.ac.il

Giora Shalgi
Senior Research Fellow
g_shalgi@017.net.il

Prof. Abraham Shaviv
Senior Research Fellow
agshaviv@tx.technion.ac.il

Prof. (Eme) Avraham Shitzer
Senior Research Fellow
mersasa@tx.technion.ac.il

Dr. Emily Silverman
Senior Research Fellow
emilys@technion.ac.il

Prof. Morris Teubal
Senior Research Fellow
teubal@netvision.net.il

Hudi Zak
Research Fellow
hudi_zk@yahoo.com

Information Specialists and Research Assistants

Miriam Asotsky

miriam@sni.technion.ac.il

Ella Barazani

ella@sni.technion.ac.il

Tsipy Buchnik

zipi@sni.technion.ac.il

Larisa Eidelman

larisa@sni.technion.ac.il

Yair Even Zohar

yair@sni.technion.ac.il

Iris Eyal

iris@sni.technion.ac.il

Ortal Faibushenko

ortal@sni.technion.ac.il

Yehezkiel Farkash

yehzkel@sni.technion.ac.il

Shiri Freund - Koren

shiri@sni.technion.ac.il

Tal Goldrath

tal@sni.technion.ac.il

Yaara Grinberg

yaara@sni.technion.ac.il

Orly Nathan

orly@sni.technion.ac.il

Vered Segal

vered@sni.technion.ac.il

Ayelet Rave

ayelet@sni.technion.ac.il

Bella Zalmanovich

bella@sni.technion.ac.il

Ilia Zatcovetsky

ilia@sni.technion.ac.il

Administrative Staff

Dorin Almog - Sudai

Research Coordinator

dorin@sni.technion.ac.il

Rebecca Best

Head of the Office

rebecca@sni.technion.ac.il

Yehiel Bracha

IT Staff

yehielb@sni.technion.ac.il

Drora Einziger

Secretary

drora@sni.technion.ac.il

Israel Meiri

Accountant

israel@sni.technion.ac.il

Sima Nadler

Bookkeeping

sima@sni.technion.ac.il

Moshe Papo

Project Coordinator

mpapo@sni.technion.ac.il

Uri Sahar

Head of Facilities

uri@sni.technion.ac.il

Debby Kaufman

In Charge of Business Development

debby@sni.technion.ac.il

Yelena Rubinstein

Housekeeping

Golan Tamir

CIO (Chief Information Officer)

golan@sni.technion.ac.il

Omer Weisberg

IT Staff

omer@sni.technion.ac.il

Samuel Neaman Institute
For Advanced Studies in Science and Technology
Technion - Israel Institute of Technology
Haifa 32000, Israel
Tel : 04-8292329, Fax : 04-8120273
www.neaman.org.il