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Part I: Environmental Education in Israel

Already in the first National Priorities in Environmental Policy paper, which was published in 1999, emphasis was placed on the overall importance of environmental education for advancing the cause of environmental protection in Israel. The Ministry of the Environment, as the main government agency mandated to protect the environment, as well as other public entities active in the field, is working to protect the environment. This includes proper planning in the different development projects: acknowledging the need to grow and develop in Israel, yet maintaining a long-term perspective by countering the economic interests who are trying to generate immediate profits in the very short-term.

The trend towards maximizing profits and saving on expenses as much as possible in the short-term, without taking into account the serious implications of these actions on the future generations, is common to many commercial enterprises, but also to government organizations which are under pressure to deliver immediate solutions. Proper planning must take into account the implications of damage to the environment, even to the point of our existence over the long term, and place them opposite the short-term interests that are driven by powerful economic and political interests.

The only way these interests can be reconciled is by raising public awareness of the need to protect our land through long-term measures, beyond the timeframe of a government term of office or the framework of a corporate profit and loss statement. If we look at what is required to ensure adequate protection of the environment in Israel, beyond the immediate needs, it becomes evident that environmental education is a condition for advancing this cause. Environmental education, at all levels in the educational system – from kindergarten through university - places the responsibility for caring for the environment into the hands of the public, who can work to prevent environment damage by applying pressure on government or private interests.

Furthermore, considering that Israel is not rich in natural resources – on the contrary, it is small and densely populated - it must protect and preserve its most important resource of all – the human resource. One of the ways to achieve this is through education that develops awareness, initiative and technological innovation. This led to the conclusion presented in the first environmental policy paper regarding **the importance and urgency of promoting environmental education.**

This year, we decided to emphasize the importance of environmental education in the hopes that the material presented will generate positive changes in the educational sector. These could include increasing environmental studies at the kindergarten and elementary school levels, expanding the academic and individual activities in environmental education in high schools, and operating “Green Campuses” at Israeli colleges and universities according to the model developed and in operation at the Technion (<http://greencampus.technion.ac.il>). Beyond the scope of formal education, initiating environmental activities for citizens groups, distributing information on environmental issues, ensuring transparency of environmental data (for example – publication of statistics on water quality of the citizens’ own water supplies) are all important measures to be implemented.

The full Hebrew document includes surveys regarding different approaches to the subject of environmental education and its place in the educational system, an overview of environmental education activities carried out by governmental and non-governmental organizations, and a presentation of environmental education activities for the general public that are held in the country’s nature reserves, parks, forests, and in environmental centers at academic institutions. It also presents an overview of how teachers are trained to teach about the environment, and finally, of course, conclusions and recommendations are presented.

Without a doubt, the special circular, published by the Ministry of Education in January 2004 entitled “Implementation of Education for Sustainable Development in the Educational System” is an extremely important landmark in the commitment of the Ministry of Education regarding environmental education. Yet, this declaration must be followed up on. The Ministry of Education must continue on the path that it started and take steps to introduce environmental education to the core curricula in the country’s schools.

The position paper gives expression to the broad scope of environmental education activities in Israel, in formal and informal educational contexts, and enables those who are responsible in this area in the Ministry of Education to use the researched data and program reports that are included within it, as building blocks for a formal plan for the Ministry in the area of environmental education in the entire Israeli education system.

The Ministry of the Environment, chronically under-budgeted, has a complex system for developing programs, educational materials and educational databases. The Ministry supports teacher training and assists organizations that are active in environmental education on a national, regional and local scale. It also sponsors educational seminars in the area of the environment. The non-governmental organizations also offer a wealth of educational programs to the formal and informal education system. As an external resource, they are highly valued for their educational contribution, which often, is also highly valued in economic terms. Yet this rosy picture can be misleading. Environmental education still does not appear in the core curricula of the Ministry of Education in a central position, and is not a subject that is written about in educational plans for the purposes of allocating study hours, for developing educational materials, or for training teachers in the field.

Among the recommendations presented in this document is that **environmental education should be declared as required for all students**. The recommendations for environmental education in the formal educational system include development of study programs in environmental education, development of teaching materials, teachers' training and overseeing the professional level of teachers operating in this field.

Aside from issuing a call to the Ministry of Education to place environmental education at the top of its list of priorities, this document also recommends integrating environmental education into institutions of higher education as well as into the IDF (*ZAHAL*) and other security organizations.

Another aspect covered in this document is the growth of environmental education in the community, and the activities of non-governmental organizations in at the community level. These activities require that the organizations that operate them present detailed plans that will enable the public to make educated and rational decisions, and the establishment and operation of a system of volunteers for environmental education in the community.

The recommendations section concludes with the suggestion that an Israeli professional/research organization should be established, similar to other such organizations in other parts of the world, which will create a platform for discussion and presentation of research and achievements in the area of environmental education. The authors of the document believe that putting together a strategic national policy with a systemic perspective will require changes in the current priorities and reallocation of existing

budgets. It appears that, in light of recent developments, the situation is ripe to move this issue forward.

All of the contributors to this document believe that it must embrace a long-term perspective, and that preparation of this document represents a first step in a process that will promote the desired changes. **The purpose of this document is to place the centrality of environmental education on the public agenda, address the anomaly that characterizes environmental education in Israel, and promote discussion and actions on this subject in the system.** We hope that this document will mark the beginning of broad discussions to devise the strategic steps that will lead to a situation where each student in the educational system will be exposed to a planned, systematic and ongoing environmental education program (education for environmental citizenship). The time has come that the “bottom-up growth” that characterizes this area will be reinforced by the system and by planning from above – necessary measures to pave the way for a sustainable society.

We would like to thank Dr. Tali Tal, Head of the Environmental Sciences Education Track in the Technological and Science Education Department at the Technion, who brought together all of the relevant entities, and enlisted them to write the surveys and articles that appear in the document, and participate in the joint discussions which led to the writing of the recommendations to advance this topic.

Part II - The Energy and Transportation Sectors in Israel

This document is entirely dedicated to the problems associated with the energy and transportation sectors in Israel, an area of prime importance to the environment, quality of life and economy of Israel. In this document there are three parts:

1. The Energy Sector in Israel, with an emphasis on development of a sustainable energy system.
2. Transportation and the environment
3. Problems of land and water pollution from fuels and organic pollutants.

Each of these parts includes a survey of the current situation and recommendations for appropriate environmental policy.

Part 1: Sustainable energy market in Israel

Part 1 of this document describes comprehensively and in detail the energy sector in Israel.

Almost every action we take in life is dependent upon the use of energy. Human society in the 21st Century depends upon energy for climate control, movement, water supply, transfer of information, food preparation, etc. We are dependent upon energy supply, primarily generated from fossil fuels, that has many disadvantages and limitations. Fossil energy sources are expendable and, even if the most pessimistic forecasts do not come to pass, the eventual depletion of this resource is beyond question. In addition to the dwindling fuel resources, the fact that a portion of the world's fuel supply is dependent upon sources that aren't reliable because of unstable political forces or connection with international terror – further limits the stability and reliability of fuel supplies.

Producing energy has environmental ramifications as well. Coal and liquid fuel, when burned, release conventional air pollutants like particulates, sulfur and nitrogen oxides and more. Furthermore, they release CO₂, a gas that contributes to the greenhouse effect. This topic is getting more and more coverage today with the increase in usage of energy by countries like China and India which, until recently consumed relatively little energy per capita.

Continuing with a “business as usual” approach to fossil fuel use can lead to a catastrophe of global proportions. The price that we, as a society, actually pay for energy is significantly

higher than the amount that appears in our monthly bills, because all use of conventional energy engenders external, long term costs related to environmental, economic and social damage. There is a critical need to include these external costs in the price of energy, both for correct pricing of energy use, and as a tool to stimulate development and use of alternative energy sources which are less damaging to the environment.

The energy sector suffers from the following problems:

- 1.** Importing gasoline to Israel (some 97% of all energy use) represents a heavy burden on the balance of payments, and it is projected that imports will continue to grow.
- 2.** Fluctuations in the price of gasoline have extremely detrimental repercussions on the Israeli economy and forecasted damage, estimated to be around 6% of the gross national product
- 3.** We cannot ignore the fact that fuel reserves are not endless. Crude oil and gas are expected to be depleted within several decades, and, long before that happens, the prices will be raised accordingly.
- 4.** Dependency on imported gasoline has long term policy and economic significance. The concentration of fossil energy sources is highly problematic – since most of these sources are connected to extreme Muslim countries that embrace terror.
- 5.** Security issues associated with delivery of energy supplies within Israel are critical, whether because of dependence on imports, or the possibility of terror attacks on energy facilities in the country.
- 6.** The use of gasoline causes pollution that damages the environment on a national and global level, and has an adverse effect on biodiversity, human health and even property. The number of fatalities in Israel related to air pollution is estimated to be in the thousands each year. There has been an alarming increase in the proliferation of respiratory illnesses (www.iued.org.il).
- 7.** From a global perspective, we should be prepared for an international call to reduce the amount of emissions of greenhouse gasses to pre-1990 levels. Israel signed and ratified the Kyoto Protocol in February 2004. Currently, it is rated as a developing country and is only required to prepare an inventory list of emissions (this has been accomplished), yet already in 2012, without any connection to the ranking of developing or developed country, Israel will be required not only to present documents outlining possible ways to reduce emissions, but will also have to carry them out.

8. The indirect damages from the use of gasoline (global warming, morbidity and mortality, damage to agricultural crops, etc.) are referred to as “social costs”, and are measured at no less than double the cost of producing one kilowatt-hour of electricity.

There are several ways to diverge from the “business as usual” approach:

First and foremost is saving energy. The estimations outlined in this section point to the possibility of saving over 20% in electric energy consumption through simple savings and efficiency-increasing operations. For example, in another project currently being carried out by the S. Neaman Institute, it has been shown that significant energy savings can be made by using more energy-efficient air conditioners. Moreover, proper architectural planning, correct use of insulation, and taking advantage of natural climate control are all measures that can dramatically save on energy use, as was outlined by Prof. Edna Shaviv and Prof. Rachel Becker in a previous study by SNI (Mitigation Policy for Greenhouse Gases, 2002).

Solutions that are more basic include increasing the use of renewable energy sources. Electricity can be produced by harnessing the wind, a system that is used extensively in different countries and is hardly employed in Israel. Moreover, the exploitation of solar energy, both directly and indirectly, can be vastly expanded from its present level. In this section, a comprehensive survey of different systems is presented, with an emphasis on the system of Energy Towers, a system developed by the section’s author, Professor Dan Zaslavski.

Detailed calculations presented in this section illustrate that, by correctly taking into account the external costs, the price of alternative energy sources is competitive with conventional energy sources. The section also addresses the knowledge gaps and important R&D addressing the development of alternative energy sources.

We would like to thank Professor (Emeritus) Dan Zaslavski of the Faculty of Civil and Environmental Engineering at the Technion, for his important work in preparing this section.

Part 2: Transportation and the Environment.

The transportation sector has a primary impact on the quality of the environment and on our quality of life. As determined by the Ministry of the Environment and environmental organizations, the main factor that determines the quality of air we breathe is transportation, and this is certainly the case in urban environments where most of us live. Moreover, the

compromised quality of the air we breathe is the main reason for morbidity and mortality due to environmental factors (research shows a mortality rate of over 1000 people a year resulting from air pollution originating with transportation in the greater Tel Aviv metropolitan area alone). In addition to its great influence on air quality and our lungs, the transportation system makes a tremendous impact on our quality of life. The Israeli citizen spends a great deal of time in traffic, and encounters transportation related problems on a daily basis. Heavy traffic loads also increase traffic accidents. Here too, it becomes evident that, even taking into account the high cost of gasoline today (over 5NIS/liter), the true cost of using a private vehicle is much higher.

This situation can be improved by employing technological measures that already exist: more use of catalytic converters and other systems to reduce the polluting emissions from motor vehicles, use of more efficient vehicles, adoption of hybrid vehicles (becoming more common in other countries), and using vehicles that run on clean fuels. Yet these technological developments must be accompanied by appropriate policy. “Carrot and Stick”- economic measures must be taken to promote the use of energy-efficient vehicles, scrapping of older, more polluting cars, enforcing the use of emission traps, etc. Above all, there is a need for a comprehensive transportation management policy, to reduce the use of private vehicles during peak hours and in urban centers, and furthermore, to advance, improve and promote the use of public transportation.

It turns out that promoting efficient public transportation service is the most efficient way to reduce environmental damage from transportation. Moreover, there are social implications as well. Not every citizen can afford the use of a private car. Developing transportation and social systems based solely on the private vehicle increases even further the gap between rich and poor, healthy and ill – a problem that is grave in any society, and certainly here in Israel, where the various social strata have still not merged. Introducing a comprehensive transportation policy that includes development and promotion of adequate public transportation is critical for air quality, to protect our green surroundings, to create a sustainable society and more. It is very important to advance this cause.

The conclusions and recommendations that were reached include the following measures (some of which can be implemented immediately and some in the longer term):

- The heavy air pollution in urban centers directly results from transportation. Findings show that about 20% of the air pollution comes from energy production and the remaining 80% from motor vehicles.
- Israel should adopt the European standards for air quality, fuel quality and standard technology. The legislation regarding clean fuels is ready and effective since the beginning of 2004.
- Governmental incentives are needed to drive the introduction of clean energy sources into the market, including proper enforcement of legislation.
- Since in Israel, according to its legislation, gasoline is enriched during the production process, an effort should be made only to use gasoline additives that are recommended by the automobile manufacturer, and bring this information to the public that is exposed, at the gas pumps, to the availability of other, unnecessary, types of additives.
- Automobile technology has significantly improved, particularly during the last decade, and the use of clean fuels should lower the level of polluting emissions by 8%. The entry into the local market of new converters which enable the use of the new fuels, should decrease them by 50%.
- The maintenance of car engines and emission control systems should be improved to achieve the greatest possible decrease in emissions using currently available technologies.
- The process of upgrading fleets of buses and heavy and mid-sized vehicles should be encouraged since legislation regarding emissions applies only to new cars. In parallel, scrapping of old cars should be encouraged. Carrying out the scrapping plan of Ministry of the Environment, at a rate of 6000-11,000 private vehicles, will yield a decrease in the scope of pollution by about 80%.
- Buses and heavy trucks, it is found that a voluntary scrapping program will have a negative impact on the economy. Because of the high polluting level of these vehicles, regulations must be established that limit their use after 14 years without any compensation.
- Transportation models should be updated so that they address the effects of air pollution. Furthermore, transportation models should put greater emphasis on access to users as opposed to the movement of vehicles.
- Steps should be taken to carry out the stated policy of the Transportation Ministry, and to put into effect measures to slow the increase in the use of private vehicles. In this vein, the option should be examined of enforcing congestion fees to improve

transportation systems, as has been done in London (and not only for funding projects, as has been the case in Israel).

- Priority should be given to (clean) public transportation and to high occupancy vehicles by supplying HOV lanes and priority at intersections.
- Integrated planning of transportation and land use should be encouraged, in such a way that the need to travel in private vehicles is reduced. The policy of land development in Israel should give priority to positioning activity-intensive development in areas that are easily accessible by public transportation; this should include increasing construction around public transportation stations.

Part 3: Pollution of land, water and air by oil-based fuels and organic materials

Pollution by fuels, oils, organic solvents, and other organic pollutants present an extremely serious environmental hazard. Penetration of organic pollutants into the drinking water supply can render it unsafe for use, even when the concentrations are extremely low. Penetration of organic pollutants into the sewer system causes irreversible damage to wastewater and precludes its use, even after waste treatment.

Organic compounds accumulate in the land and already today there are several sites in Israel where the ground is polluted and dangerous, which cannot be built upon and which endanger the health of those living in proximity to them. In land contaminated by organic pollutants, fumes are released by these materials, some of which are poisonous and dangerous. Already today there are areas where these vapors penetrate into the lower floors of buildings and mainly in basements. This is an extremely serious problem according to all of the experts and all of those who are exposed to it, and the assessment is that preventing and solving this problem must be given top priority.

During the period while we were working on this subject, a report was issued by the State Comptroller summarizing environmental problems in the infrastructure of the energy companies. The report raised serious defects in the way these companies operate, as well as the government agencies active in the field.

The measures needed to address fuel and oil pollution are under the jurisdiction of a number of government agencies: primarily the Ministry of the Environment and the Water Authorities, but also the Energy Authority in the Ministry of Infrastructure, the Ministry of Transportation, the Ministry of Trade and Industry, the Planning

Authorities, and as always, the Ministry of Finance. However, there is problem of coordination between these different organizations. One of the suggestions in this section is to establish a joint management body comprising the different government ministries, whose main responsibility would be treatment of this problem and avoiding future ones.

Official supervision to prevent gasoline pollution is a struggle between government units without budgets and staff, and strong, economically sound commercial interests, with thousands of workers and abundant financial resources. The ideal solution would be to transfer the responsibility for supervision to the industry itself, while maintaining a governmental system for overseeing their compliance. In such a model, the responsibility for preventing pollution rests with the facility owner. This model is familiar from many sectors, where the property owner must insure his or her property (building, infrastructure work or consumer goods) against damages it may cause. In many countries environmental insurance is mandatory. In the US, the area of environmental insurance is highly developed, and every gas station must hold such an insurance policy against possible damages, with coverage equaling millions of dollars. Environmental insurance is an administrative and economic application of the principle of “the polluter pays”, and making it mandatory would create a major incentive for industry to do everything it can to prevent environmental damages. It is highly recommended to introduce this concept into the fuel industry first and foremost, and after that, it can be used in other sectors as well.

The conclusions reached by this working team can be applied in other areas as well, even though it seems that, in at least some of the cases, they should be applied specifically to the area of gasoline pollution.

1. It was shown that responsibility for this area, which is divided among several government entities, does not yield coordinated, effective results. Moreover, the number of conflicts between organizations is increasing, which results in delays, mutual disturbances and lack of progress. Still, it was found that in Israel and in the world, the operation of a single government entity with the necessary authority from the different ministries is a very effective system. Thus it is recommended to **establish such an authority** (top priority a Coastal Aquifer Authority), or an authority to address water quality.

2. Transfer the responsibility for preventing pollution to industry or other pollution generators, by **implementing mandatory environmental damage insurance**. This would ensure that the interest of the potential polluter is to do everything in his power to prevent pollution. Furthermore, it will introduce the insurance companies, both Israeli and international, into the picture, who will exert their own pressure on potential offenders. It appears that the energy sector is highly appropriate for introducing this approach in Israel.

3. Improvement in legislative processes, and approval of establishment of gas stations and facilities that are compliant and protected.

4. Establishment of an Environmental Fund dedicated to financing the upgrade of energy facilities, rehabilitation of contaminated land, and treatment of water contaminated by fuel.

5. Increasing public awareness, public control and transparency are all critical in order to bring into balance the power of industrial entities opposite those organizations responsible for protecting the environment. One important area is the transparency regarding water quality and reports to citizens on the quality of water that reaches their homes (this information should be accessible to any citizen, as it is, for example, on special internet sites in the United States).

6. Specific steps are required, such as repairing industrial gasoline tanks, in agriculture, in the security system and in citizens' homes.

7. Appropriate professional training is required for gas station employees and for workers installing gasoline pipes.

Part III - Characteristics of Environmental Administration and Management in Israel

This document incorporates two projects in the area of environmental administration. Both topics raised here, in our estimation, will develop greatly in the coming years and as such, it is important to bring them to the attention of environmentalists and those active in this field. In addition, a short progress report on the continuing project investigating the close connection between agriculture and the environment is included.

Part 1: Applying alternative approaches to conflict management over environmental issues in Israel - conflict mediation.

By its very nature, environmental policy encompasses an innate conflict between development and preservation. On the one hand is the desire and need to develop new industries and increase economic activities. On the other hand, there is a need and demand to protect the environment, preserve open spaces, and enjoy clean air and pure water. Thus, there is an inherent conflict between these two important forces.

As can be expected, certain parts of the population identify strongly with the need for development, as opposed to other parts that identify more with the need for preservation.

Proper environmental policy recognizes the legitimacy of both approaches, with the aim of achieving responsible development that causes the minimum environmental damage (assuming that one can never entirely prevent environmental repercussions). Responsible development is, by definition, a compromise between the need to develop and the need to protect. Thus, appropriate environmental policy must recognize the entire picture for all parts of the population and for all interested parties.

In contrast to a policy of command and control, environmental policy is increasingly embracing the approach of mediation for conflict resolution. This approach is developing in parallel, and sometimes in lieu of the legislative system, the courts and law enforcement, offering a conflict resolution alternative between those with a vested interest in development, and those seeking to protect the environment, where each side has different shades of interest, opinions and world view.

Most of the problems in the process of environmental conflict management in Israel can be characterized by two main incentives: **Efficiency and Responsibility**. Improving **efficiency** can be achieved through flexibility of bureaucratic procedures, and **responsibility** can be enhanced through public monitoring. Each one of these elements, on its own, can compound the problematic nature of managing environmental conflicts: too much flexibility can compromise the quality of the supervision, whose purpose is to protect the environment; too much supervision can compromise the efficiency of the process. Thus, it is important to balance between them.

In spite of the difficulties and challenges, a blend of flexibility and monitoring can be reached, when both the process and the agreements are established by all of the parties involved, and the responsibility for carrying them out is shared. For many of the problems that are covered in this article, it seems that they can be resolved through joint discussions between the involved parties, without a large investment in resources: establishment of decision-making processes and for public involvement in the process, attention to problems of presentation, and definition of areas of responsibility which will resolve some of the problems of enforcement, supervision and control. Thus, it will be possible, for example, to develop specific mechanisms to protect the environment related to a specific project or conflict. These kinds of mechanisms can be overseen by any entity the parties agree upon, and not necessarily the authorities. In this way, the commercial entities and the public can assume responsibility, and not leave everything up to the supervisory authorities. It is also worth aiming to replace those processes which are based on conflicts with those that are based on promoting dialogue and cooperation with the potential interested parties, **before** they reach a point of conflict – at the early stages of planning or drafting of a proposed legislation, etc.

For those who are active in environmental issues and planning, it is important to be familiar with the problems inherent in the process and raise them on the agenda **as subjects that must be addressed**. Those parties who are involved in an environmental conflict must address the process as a subject for decision making to the same degree as the environmental issues themselves. The advantage of addressing the elements of the process is that many of them arise in different conflicts. Furthermore, in Israel a significant portion of the parties return to face each other in different conflicts. From here, success in resolving one conflict can contribute to resolving other conflicts, and

even prevent others. In parallel, conflicts that can be resolved by other methods should be identified as such. This kind of identification can be achieved by having a third party evaluate the conflict, after interviewing the interested parties.

In addition, a precondition for advancing other processes for environmental conflict management is to involve a powerful professional force in the field. This force should be applied both between the facilitators of the process (who are third parties) and between the participants who are invested in the different conflicts. Creating professional power can be achieved through intensive and comprehensive training of environmentalists and planners. This type of training must provide professionals with the tools to create change in the existing processes.

Dr. Michal Ben Gal and Dr. Debora Shmueli of the University of Haifa expand upon this process in the full document in Hebrew and present the approach to mediation in situations of environmental conflict. We believe that the mediation process can contribute greatly to the trust between the involved parties themselves and between the authorities and the public, to create long-term relationships and to pave the way to a joint solution to prevent environmental problems in the future.

We believe that this approach will be implemented more and more in the future and we hope that awareness is rising in this country along with the need to reach solutions to conflicts without involvement of the legal and law enforcement systems.

Part 2: The Environmental Responsibility of the Regional Councils.

Another topic raised in this document is the importance of environmental involvement of local governments. Protecting the environment and preserving environmental quality and reasonable quality of life are important to every citizen since we naturally tend to focus mainly on our immediate surroundings. Every citizen would like to have a well tended public park and prevention of loud noises, etc. near his home. The responsibility for ensuring a pleasant and reasonable environment in residential areas and places of work, in addition to providing basic services such as garbage collection and waste removal, belongs to the local councils.

Special responsibility is placed on the regional councils, which fulfill the function of local councils in most of the land in Israel. Some 83% of the country's land is under the

authority of the regional councils. They are responsible for protecting the environment on behalf of the citizens residing within their jurisdictions, but also on behalf of all of the citizens of Israel who travel on their roads, and come to visit their natural attractions, and to enjoy open green spaces, which embody values of nature, agriculture and national heritage. The regional councils must take an active role in preserving the nature and landscapes in their areas of jurisdiction. They should be aware of this role and organize themselves accordingly.

Dr. Anat Gilboa Ron, environmental consultant, prepared a background paper, which was distributed by the Environmental Committee of the Regional Councils. The responses from the members of the regional councils and other organizations are included in the full Hebrew document. The full document, emphasizes that, in addition to the regional councils' responsibility to ensure a reasonable environment in their jurisdictions, they must also preserve and promote economic value for their residents. In fact, at the practical level, activities of this kind are being carried out in some of the regional councils in different environmental areas, but since there is practically no coordination on a systematic level, and every one is "inventing the wheel", it can be expected that this process will be a lengthy one and will be exposed to conflicts within the systems, on a national and regional level. Thus, the initial findings of this work point to the need to create a **mechanism to preserve open spaces** beyond the auspices of the regional councils themselves – a mechanism that will be budgeted from government funds and whose operations will be protected by law.

In parallel, it is suggested to consider organizing among the regional councils on a national level in the area of open spaces, in order to gain an **advantage of size** to achieve the goals that are defined and to balance between development and preservation.

The **coordination and cooperation** between the regional councils should be increased, in cooperation with the Ministry of the Environment. Moreover, the awareness of the regional council heads should be raised regarding the different possibilities for improving the environmental impact in their counties, and the potential tools for environmental management of their open spaces (including waste treatment and environmental education). This emphasis on coordination must extend, of course, to the government ministries as well (Infrastructure, Agriculture, Interior, Environment, etc.).

One of the central themes that must be addressed in the context of treating open spaces is **the problematic interface between the regional councils and the settlements of minorities**. Creating “areas for mutual existence” – industrial areas, commercial areas and services, open parks, tourism projects, etc. which benefit all of the residents in a region, will promote the common interests, create an important incentive towards dialogue between the sides, and promote cooperation in other municipal areas as well. The discussion presented here is extremely important, and we have no doubt that this it will continue to be discussed on the public agenda.

Part 3: How to preserve Israeli agriculture as a critical environmental factor

The topic that follows relates to another section presented in this document, a report on the continuation of a project that is examining the connection between agriculture and the environment. This subject has been raised in every one of SNI Environmental position papers that were published to date. In the work that was presented in the third Environmental Policy paper (2003), it was emphasized that Israel’s agricultural lands and the agricultural heritage are an integral part of its environmental picture. We all want to see green fields, pastures of flowers in the spring and a cared for landscape. The existence of crowded cities demands the existence of agricultural areas as a green lung for the city, for areas where urban waste can be processed into fertilizer, where wastewater can be processed for irrigation, and where, to some degree, polluting emissions in the air (conventional and greenhouse gasses) can dissipate.

It was emphasized that agriculture has external positive environmental value to Israeli society and the need to return at least part of this contribution to the farmers was raised, both through fair payment for the services they provide, but also for supporting the existence of agriculture in Israel. The initial report brought this issue to the public attention and the work was continued. In cooperation with Zenobar Consultants, an economic estimation of the external value of agriculture was made and presented on the S. Neaman Institute website (in Hebrew).

It was found that the average external environmental value of each hectare of agricultural land is about \$700 a year. Different approaches were suggested to reimburse this contribution and support environmental agriculture as fair compensation for the crucial public service it provides. In this work, the subject of rural tourism was

addressed, as an economic activity that assists the agricultural sector and which emerges from the existence of agriculture. This work is currently entering a new stage, where this approach is being adopted in several areas in the country. We see this activity as an example of the importance of bringing environmental subjects for professional and public discussion and an example of how public discussion of important topics can bring to realization solutions for environmental problems.

The Jezreel Valley and Megiddo Regional Councils are planning special areas where efforts will be made to improve the environment through cooperation and integration of tourism operations in the area. Projects will be carried out to beautify the roadsides, with an emphasis on agricultural elements (examples of regional crops, seasonal flowers and pick your own flowers, etc.) and to improve the rural tourism infrastructure.

At the same time projects for appropriate environmental and economic use of urban waste are being planned, including a system to determine appropriate crops for the region which can be irrigated with treated wastewater, while determining the optimal level of treatment. Other projects are underway to determine appropriate use of compost from urban waste and sludge from wastewater treatment centers. These activities will represent major savings to the national economy, at least some of which could be reallocated to supporting agriculture.

Similar projects are planned in cooperation with the Emek Hefer and Drom Sharon Regional Councils. **Beyond the intrinsic importance of these projects, we see them as an example of the success of the SNI in raising environmental subjects to the center of the professional and public agenda, a process which is crucial if we are to effectively preserve our environmental quality.**