



Samuel Neaman Institute  
FOR ADVANCED STUDIES IN SCIENCE AND TECHNOLOGY

NATIONAL ENVIRONMENTAL PRIORITIES OF ISRAEL



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# **NATIONAL ENVIRONMENTAL PRIORITIES OF ISRAEL**

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# INTRODUCTION

The state of the Israeli environment requires urgent and immediate action. In many places the air we breathe has pollution levels significantly above accepted standards resulting in thousands of cases of disease and even death. Clean water is endangered, and waste is accumulating in landfills that in part fail to meet international standards. Our land resources, a scarce national treasure, are being robbed and developed without consideration of national interests, phenomena that is leading to decline in available open spaces and natural landscapes. The cities are congested with vehicles and their emissions, our beaches are being privatized for real estate interests and robbed for profit with the cooperation of the local authorities. Emergency environmental planning and policy is critical.

National environmental policy must be based on established agenda of priorities. As in every country, there are many issues that require attention, but, they can not all be immediately dealt with effectively. Therefore, an environmental audit, which determines an agenda of priorities, can be used to ensure that ranks are given to those fields that require it in maximum efficiency of resources allocation.

During 1998, more than 100 experts in diverse environmental fields, were involved in discussions leading to the establishment of a list of priorities and a course of action for addressing environmental issues in Israel. Background papers were prepared by experts in each given field and reviewed by additional experts to include their response and comments. Subsequently, workshops were established for discussing the proposals and recommendations that were presented in the professional framework.

The original report includes the ten following chapters:

**Open Spaces, the Urban Environment, Transportation, Air Pollution, Ground Water, Sewage & Wastewater, Hazardous Wastes, Solid Waste, Marine & Coastal Environment and Agricultural Environment.**

We are certain that the material prepared over this past year will serve as a useful basis for decision making and establishing policies in the environmental field, by governmental organizations, active environmental groups, and public interest organizations. In addition, we anticipate that publicizing this report will be of interest and importance to the general

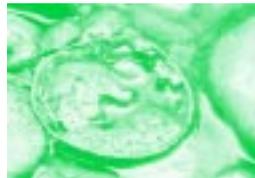
## INTRODUCTION



public, and will provide the impetus and background material for further studies. The object of the report is to set priorities for actions that can be implemented within a period of five years. **The intention of the initiating and editorial bodies of this report is to continue this work through further discussions, in order to update priorities in the environmental field in Israel and to continue the process as a permanent environmental think-tank.** Besides the need to revise recommendations, this is a dynamic process whose value is in the continuous updating and reassessing of the situation. Consecutive work by objective and independent experts will provide an important forum for professional discussions, and a professional framework for organized research and process development in the environmental field in Israel.

In the future, we will test these suggested priorities, the progress in the various fields, and examine the implementation of the recommendations.

We hope that the publication of this report will provide an important contribution for the advancement of environmental issues in Israel. This field demands extensive improvement, support and action, in order to protect the land under our stewardship, to protect the environment and to establish conditions that will allow Israeli citizens to enjoy a quality of life within a healthy environment.





# ESTABLISHING PRIORITIES AND AN ACTION PLAN

There is a need for definition of the most important long-range goals to be achieved by the planned environmental policy prior to making the choice of priorities and their ranking. Subsequently, pre-requisites to achieve these goals have to be resolved and interim range priorities must be agreed upon. Characteristic of the network of environmental considerations is that the different issues are interconnected with each other. Thus, discussions on air quality problems extend to the necessity for changes in the transportation system, which is also related to the balance between urbanization and open spaces.

The priorities and an Action Plan suggested here were based on the following criteria:

**a. Pre-requisite actions required for implementing correct environmental policy**

Some actions are prerequisites for implementing environmental policies, even if by themselves they would not solve environmental problems.

**b. Prevention of Irreversible damage must be prevented**

It is clearly important to take measures to prevent irreversible, or difficult to remediate, damages from occurring. In order to address this concern, the potential damage should be evaluated.

**c. Severity of damage to humans and the environment**

Environmental problems that pose a risk to human health and life have a high priority, as is the emphasis on preventing severe ecological damage.

**d. Consideration of economical factors**

Recommendations will favor effective measures that can be materialized in a relatively short-term period and at a low cost.

**e. Global issues**

This report does not address global issues that Israel is committed to by international agreements, such as refraining from the use of CFCs or reducing greenhouse gas emissions.

Fulfilling these agreements has already been accepted as a clear obligation of the environmental, international and economic national policy.



# ESSENTIAL CONDITIONS FOR IMPLEMENTATION OF EFFECTIVE ENVIRONMENTAL POLICIES

## **Raising Public Awareness**

Public awareness and supporting active environmental groups are vital for reaching most of the environmental targets. Activities such as urbanization of open space, development of marina, roads and negligence of proper hazardous material management, are very often backed up by powerful business interest groups. The strength of an environmental policy depends, to a large extent, on the existence of a strong and large environmental lobby. This includes establishing a popular environmental political lobby, promoting active neighborhood committees for the improvement of the local environmental quality, promoting changes in the use of private cars, solid waste treatment, and so forth. The establishment of public environmental bodies is thus a high priority objective, which requires resource allocation and governmental assistance.

## **Environmental Education**

Effective environmental education is required at all levels, from kindergartens through universities. Environmental education will assist in developing environmental awareness in our youth, while environmental education in the universities will enrich our professionals, who will therefore consider environmental problems to be within their professional activities. The Ministry of the Environment and other ministries should support the advancement of environmental education in academic institutions and promote the incorporation of environmental topics throughout existing academic programs.

## **Full cost accounting in goods and services**

Environmental costs (externalities) should be included in the pricing of goods, in order for the system to make rational assessments. Inclusion of the environmental costs in the price of the products or services will lead to a natural development of alternatives that are more environmentally friendly. The tendency to refrain from internalizing the environmental costs results in subsidizing the polluter and transferring the costs of environmental treatment to the next generations or to the tax-payer at large.

The government should adopt the "polluter pays" principal.

## **Publics' right-to-know**

The principal of the public right-to-know should be followed relentlessly. All information concerning environmental polluters and activities having environmental impact should be transparent and available to the public. Public participation in discussions and decision-making regarding these issues should be encouraged.



# PREVENTION OF IRREVERSIBLE ENVIRONMENTAL DAMAGES IN THE STATE OF ISRAEL

The range of topics discussed in this report, are all related to **planning** the Environment in which we live: Allocating enough open spaces relative to inhabited areas, industrial zones and infrastructures, managing the urban and inter-city transportation system air pollution, rivers and more. All these issues need an integrated environmental planning.

Some urgent and immediate measures should be implemented in order to prevent the destruction of Israel's already damaged environmental fabric. Continued rapid development without environmental considerations will bring our small and already crowded country, to an irreversible hold on land and the disappearance of open spaces; an irreversible decline in the urban fabric, congested roadways and relegate ourselves and future generations to breath pollution saturated air.

Maintaining open spaces, preservation of nature and landscape is not just a desire of a minority of altruistic groups, but is the essence of Zionism. Our country was established to enable the realization of a vision in which the citizens can identify with a country pleasant to live in, where our historical and traditional heritage can be quarried, and a place where we can breathe clean air and watch a flower bloom.

## **The principals guiding activities to prevent irreversibl environmental damages are:**

- Land is the most limited resource in Israel, even more limited than water. Land cannot be used by the nation as an alternative solution to economic problems, by providing land at low cost to pressure groups for development, re-zoning agricultural land for urban development as compensation to farmers, or dispensing land casually to private citizen's concerns.
- The availability and conservation of open spaces is a guarantee for the well being of the urban population. Open spaces and agricultural lands serve as an environmental, yet economic sinks for the waste products produced in the cities, such as solid wastes, sewage and more. It is essential to conserve the balance between urban centers and open spaces.
- Social justice and citizen's rights demand free access to and use of open spaces for everyone. Without protecting these open spaces we will loose these

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environmental rights.

- Land conservation requires protecting landscapes and nature against abuse and destruction.
- Already, most of the citizens live in the extended coastal metropolitan area. This metropolitan area will continue to expand with the increasing number of residents. We should aim for cities pleasant to live in, that will not expand uncontrolled and that will efficiently use their land resources and maintain a balance with their environment.
- The transportation system should allow every citizen to travel comfortably and efficiently to his or her destination, though not necessarily in a private vehicle.
- The transportation system should operate in a manner that minimizes damage to the environment. Unplanned development of transportation infrastructures causes irreversible environmental damage such as large paved areas, especially in extended highway systems. The result of dispersed small communities that do not support comprehensive public transportation services is the extended use of private transportation.

### The activities required for preventing irreversible damages:

1. There is a need to legislate a **land law** that will limit zoning changes to exceptional circumstances, and only after a thorough examination within a statutory framework.
2. Land management should be under the control of a **single authority**. Only this authority can authorize and change land designation.
3. The National Council for Planning and Building will be responsible for national land use policy. **A land commissioner** should be appointed to control land activities.
4. The Israeli Land Authority should be the implementing body and be responsible for managing the available land, according to governments policy. The authority will be prohibited from promoting changes in land designation.
5. **A National Master plan** for the use of open spaces must be prepared.
6. Consistent and effective enforcement of injunctions **preventing beaches and sea front construction**.
7. Raising **public awareness** is an essential component in the battle to conserve open spaces. There is a need to promulgate environmental information to citizens, to clearly explain to the public that covering open spaces with roads, parking areas and buildings, robs them of their basic rights to enjoy Israel's nature and natural landscape.



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8. **Urban planning** should enhance a dense, planned and efficient concentration of buildings and neighborhoods, instead of small, dispersed homes and communities that result in a waste of land resources and produce a need for longer road systems. The establishment of new communities and neighborhoods bordering on existing communities should be prevented, as well as the designating of agricultural land and open spaces for residential and commercial development.
9. It is important to encourage the establishment of a public, urban and inter-city **transportation system** accessible to all, which will provide accessibility to shopping centers, work and residential centers.
10. Old and deteriorated city centers should be revived, into **new** densely constructed **city centers** with appropriate infrastructure. This action should be supported by appropriate planning and tax policy.
11. **Restoration** of building facades, roofs, courtyards and gardens should be mandatory and supervised.
12. Providing appropriate pathways should support **walking and bicycling**. Clear and unobstructed sidewalks for pedestrians should be maintained.
13. The level of **public transportation** should be improved, including the frequency, travel times, reliability, ease of transfer between lines and more. Fares should be reduced to encourage the use of public transportation.
14. Separate lanes for public transportation should be designated.
15. National and suburban **rail transportation** systems should be intensely developed.
16. "Park and ride" **parking lots** should be established at city entrances. Parking costs at parking lots in city centers should be raised with even higher rates for prolonged parking.
17. Taxes should be set to improve the **vehicle quality** by reducing taxes on purchasing new cars and raising taxes on fuel. This will promote the use of new and less polluting cars while decreasing the total kilometrage (mileage) done with these cars.
18. Maintenance of existing cars should be improved and **vehicle emission standards** enforced during the annual vehicle test when checking car exhausts and by random checking on the roads.
19. Buses and cars should be converted to engines using Liquefied Petroleum Gas (LPG). All buses should be equipped with **catalytic converters**.



# PREVENTION OF ENVIRONMENTAL POLLUTION IN THE STATE OF ISRAEL

## **Actions to prevent water pollution and promote water reuse**

The groundwater quality is deteriorating. The policy of overusing groundwater has led to salt water intrusion, a process that cannot be remedied in the near future. This situation will require desalination of water from some of our wells. In order to stop this process and postpone the need for massive desalinization, further contamination of the groundwater by heavy metals and organic pollutants should be stopped.

Sewage in Israel is a source of pollution, while on the other hand it provides an alternative water source. A correct policy will extend the potential national water capacity, by solving the problems of environmental pollution. However, it must be emphasized that improper sewage treatment leads to serious damage to agricultural use of the water and prevents the restoration of rivers, for which the treated water is used.

Recommended actions to prevent water pollution and promote water reuse are:

1. Protect all groundwater sources against contamination by heavy metals, organic materials, and residual fuel.
2. Utmost protection of the areas feeding the mountain aquifer and the non-contaminated portions of the coastal aquifer.
3. The Sea of Galilee must be highly protected, specifically from pollutants arriving from its basin.
4. Monitor and reduce the use of excessive fertilizers. Reduce the use of treated water for irrigation on sensitive groundwater feeding zones. Prevent pollution by effluents from animal farms.
5. Prepare a general scheme of sewage treatment and the target areas for the utilization of the treated effluents, including pipelines system from the source to the sites of utilization, mostly the Negev region.
6. Establish quality standards for effluents, according to their intended use or discharge point (rivers, sea, groundwater etc.). Attain an effluent quality sufficient to prevent river contamination.
7. Water treatment facilities, sewage treatment facilities and water distribution networks must conform to high quality and reliability standards. Demand a policy of zero failure for these systems.



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8. Institute economic and management tools for operating the water systems, to provide realistic water pricing. Pricing policies should encourage water savings and responsible practices towards leaks in the water or sewage distribution systems. Use a closed water management authority system; policies requiring the polluter pays, which will enforce the authorities and the larger users to pay for water treatment and compensate for any reduction in quality; policies that encourage the use of effluents in the agricultural sector.
9. Establish arrangements for the prevention of pollutant emissions in the feeding zones of our joint aquifers, in the West Bank regions of Judea and Samaria. Urgent actions are needed to establish and manage sewage treatment plants in the Jewish and Arab communities. Transfer and use effluents for irrigation in less sensitive regions.

### Air Pollution

Air pollution in the cities provides a serious risk to the health of the population, despite a measurable improvement in air quality in some regions and the reduction in emissions from industry and power stations. Most of the sources of air pollution are generated from vehicle emissions and from a number of polluters that have not solved their air-polluting problem properly.

The recommended actions to improve air quality are:

1. Reduce contaminant emissions from vehicles: improve public transportation and reduce emissions from private vehicles, including closing portions of the cities to private cars and extended closures on days with high pollution levels. Take measures to reduce the number of older vehicles on the roads. Improve the fuel quality in Israel, by adapting European fuel standards. Increase enforcement of vehicle emission standards.
2. Currently, there is no standard for small particulate emissions, which are known carcinogens. A particulate standard below 2.5-micrometer (PM 2.5) should be established and enforced.
3. New standards should be established, updated and enforced for organic substances.





4. Activity should be accelerated promoting the study, monitoring and enforcement of prevention of obnoxious odors pollution.
5. An air quality monitoring systems should be operated on a national bases, and the data should be promulgated in a clear, rapid and timely manner to all interested parties.

### **Hazardous Substances**

Industry and modern society require the use of a long list of hazardous substances some of which can seriously harm our health and even our lives, and some of which can cause irreversible changes to the ecological systems and pollute our fresh water, land, sea and air.

The recommended actions to improve hazardous wastes management are:

1. Hazardous waste treatment must be conducted in an organized framework in all involved offices. An authority for hazardous materials should be established and managed by the Ministry of Environment.
2. It is essential to adopt high level of operations and maintenance in the Israeli industry, especially in the chemical industry plants, as practiced in developed countries. Accidents in these industries can lead to disasters and extreme damage to people and property. We must demand from industries to implement advanced technologies in the field of safety and environment. Maintenance levels should be stringen and good.
  - Industries must update technologies and maintenance. They should be required to adopt the environmental management program ISO 14,001 and Quantitative Risk Analyses (QRA). These are instruments to expand the level of safety in conjunction with an efficiency increase that leads also to savings and provides a competitive advantage.
  - It is essential to develop procedures to treat wastes from small industries. A large proportion of the hazardous waste from these industries is not adequately treated and can pose a great danger, despite the relative small quantities produced from each workshop or small industry.
3. There is no single solution for hazardous wastes management. Routine inspections and monitoring should be conducted in order to maintain a high level of safe handling and treatment, by using various approaches and methods.



- Prioritize waste minimization, through in-situ recycling or treatment.
  - Support the establishment of regional waste treatment centers, with an emphasis on treating hazardous waste from small industries, within a monitoring and enforcement regime by the Ministry of Environment.
  - There is an urgent need to locate a site and later to establish an additional national hazardous waste site along with additional operating companies.
4. There is a necessity to monitor the use of pesticides in the agricultural sector, and promote the reduced use of these substances. Adoption of integrated Pest Management, which prefers biological warfare on pests, is highly recommended.

### **Municipal Solid Wastes**

Wastes in residential areas are one of the most noticeable phenomena raising the angry response of residents. In addition to a demand for cleanliness, waste is a serious groundwater pollutant, source of odors, reduces property values and leads to extensive emissions of greenhouse gases. Recently it has been recognized also as a hazard for civil aviation safety. A comprehensive solution to the problem of solid waste must first address environmental concerns, but it is also important to consider economic values, including realizing the potential added value (resources) of the garbage.

Managing the Israeli waste sector must be based on a variety of solutions, because only an integrated approach will lead to a sustainable (environmental, economic and social) solution. There is a need for a comprehensive treatment of the waste produced in Israel, addressing environmental, economic and social issues.

This target will be achieved by choosing the most economic alternatives and by adoption of the Polluter-Pays principal. Local authorities must be responsible for collection, storage and disposal of solid wastes, while the treatment costs must include environmental costs.

As a topic affecting every citizen, an active education program, providing explanations and involving the public must accompany the measures and solutions to the problem of solid wastes.



Priorities and ranking the activities in the field of MSW management:

1. Closure of open dump-sites and establish properly operated sanitary landfills.  
**The following steps must accompany these actions:** Phased cessation of subsidies for waste transfer and landfilling; Privatizing specialized services to treat garbage, including landfills operation; Authorities must also pay the environmental costs (i.e., by imposing a landfill tax); Restoration of closed sites in order to reduce their impact on the environment and to free the land for other uses.
2. Decreased production of waste in the industrial sector (e.g., commercial centers, hotels, catering services and other).  
**Necessary conditions for operations:** economic incentives to reduce the volume and amount of solid waste (especially cardboard and organic material), close the loop in the recycling cycle (set-up industries that will accept and process the waste into finished products).  
**Possible actions:** Install compactors for cardboard containers; Separation and composting of organic material (from markets and groceries).
3. Reduce and minimize the volume and amount of domestic wastes.  
**Necessary conditions for operations:** economic benefits for reducing the amount and volume of wastes (pay according to the weight or volume of the wastes); Education and explanations; Close the gaps in the recycling cycle.  
**Possible actions:** Promote the use of home composters; Separation at source (in densely populated neighborhoods).
4. Studying the incineration solution, including domestic wastes. Use of waste incineration technologies with high environmental standards.
  - Incinerate residual wastes under controlled conditions [residual paper, plastics (except P.V.C), pruning and wood].
  - Use fuel-rich organic materials for the cement industry.

Implementing the recommended actions can enable the use of large portion of the wastes: composting- 50%, secondary raw material- 20%, energy production- 20% and only 10% will be landfilled.

Continued actions in this direction will lead to significant reductions in the land required for land filling in Israel, reduce the dangers of contamination and solve the problem of solid wastes in an environmental and economic manner.



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### Damage to coasts and marine contamination

The marine environment is also becoming more and more loaded, polluting the sea, directly or via rivers. Construction of ports, marina and artificial islands in the sea retards the flow of sand along the beachfront and destroys the marine ecosystem. There are currently alarming indications of environmental damage in the quality of water in the Gulf of Eilat and Haifa bay, marked damage to the sea-shores, and corral reefs.

Recommended actions to minimize coasts and marine pollution:

1. Establish a national committee for the marine environment that will set environmental policy and follow-up on the implementation of national policies and agreements.
2. Monitor the marine environment, in both the Mediterranean Sea and Gulf of Eilat.
3. Totally prevent the flow of pollutants to the Gulf of Eilat, that can destroy the coral reefs and impact tourism in this unique area. Promote further development together with our neighboring countries to reduce to the minimum the transportation of fuels and other pollutants by way of the Gulf, and increase safet measures to prevent environmental damage.





# CONCLUDING STATEMENTS

In this report recommendations for environmental actions over the next five years are presented. We are aware that the available resources in Israel are limited, perhaps more than in other developed countries. This constraint was considered in formulating the set of present priorities.

**It is important to emphasize that a large part of the recommendations presented require assertive decision-making and not only limited financial support from the national treasury.**

The recommended activities include increase public awareness and environmental education; legislating a land law; planning the use of land and environment and urban centers; solutions to improve public transportation by providing for bus lanes and using existing railway tracks, etc. All these and others can lead the way to a breakthrough in the environmental conditions in Israel, without demanding large budgetary expenses.

**A large portion of these recommendations and the steps required for their implementation depend on the recognition of their importance as well as the ability to make decisions and set clear cut policies in Israel.**





## LOOKING INTO THE FUTURE

The national environmental priorities project is an ongoing activity, reflecting the dynamic nature of the topic. A continuous effort to educate the public and raise its awareness by outreach activities will be implemented, to include seminars, workshops and annual report to be presented at a high-profile symposium under the auspices of the Minister of the Environment. Demonstration projects will also be initiated, such as the Green Campus Project at the Technion, which is currently underway.

Professional activities of follow-up and updating of the issues covered in the first stage of this project will be launched. In addition, topics not covered in the first stage will be developed, such as Marine and Coastal Environment and Agricultural Environment.





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