Chapter X: The Environment

Introduction

The vision for Israel for 2028 is an economic/social vision that is also based upon a high quality of life for all its citizens and future generations. A quality environment is an integral part of quality of life. Much of the economic progress Israel has made over the past sixty years has come at the cost of a deteriorated natural environment: increased air, water and land pollution, and a significant decrease in open space. The interrelationship between environmental protection and economic development has become clearer in recent years and the principle of "Sustainable Development" or "Sustainability" has become rooted in international development lexicon. In order to achieve our twin goals of economic prosperity and quality of life, Israel must fully embrace the principle of sustainable development.

The principle of sustainable development dictates economic development along with preservation and protection of natural resources; restraint in consumption that causes over-use of resources; preference of renewable over expendable resources, and more.

The continuous growth since the founding of the state has increased pressure on Israel's natural resources. Population growth, along with increased population density and impressive growth in GDP per capita, have lead to increased strain on natural resources. Increased industrialization, electricity production, and motorization are the prominent factors in the tension between modernization and environmental quality. As our national objectives and proposed strategy include continued growth of economy population, we may expect an accompanying increase in consumption and standard of living, motorization rate, industrialization and population density. These forecasts pose considerable challenges for Israeli society, which lives in a limited, densely-populated geographic region. **Unwise exploitation of our limited natural and environmental resources may cause irreversible damage, in the absence of the technology or economic means to rehabilitate them. This may also be seen as an obstacle to sustainable economic growth.**

In recent years, Israel has invested significant efforts in addressing environmental issues: purification and reuse of sewage (Israel reuses purified sewage at a rate of about 70% of sewage; the next country on the list is Spain, which reuses only 15%), a certain amount of solid waste recycling, some regulation of sewage flow into riverbeds and the sea – but this is insufficient. Future challenges and improving areas of past neglect require considerable attention in order to preserve quality of life and environment for the coming years. The greatest challenges involve energy conservation and transitioning to use of renewable energy sources; reduction of domestic and global air pollution caused by stationary sources and transportation; an acceptable quantity and quality of water supply; waste water treatment and judicious use of sewage water; treatment

of hazardous and municipal waste; and, of course, protection of open areas and acceptable urban spaces. Two domestic issues that exemplify Israel's problem are the prevention of dumping sewage into rivers and the completion of a sewage and purification infrastructure in the Arab sector, and the unique issue of necessary Israeli-Palestinian coordination in all realms of water, air and land pollution prevention.

In recent years, tremendous efforts are being made in the developed world, aiming to create a framework for international action and to shape the necessary measures to address phenomena such as global warming, which is one of the most prominent global market failures, as well as ozone layer damage and other challenges. According to a report edited by Robert Stern, head of the British Economic Service and former Chief Economist of the World Bank, and published in October 2006, the composite of dangers posed to humanity is estimated at 20% of the world gross national product, if action is postponed. In contrast, the cost of preventing these serious ramifications is estimated to be about 1% of the world GNP if action is commenced immediately.

Until 2012, Israel is not obligated to reduce greenhouse gas emissions. When the Kyoto Protocol expires in 2012, Israel will have to join the world effort to reduce greenhouse gas emissions. Participation in global processes requires more stringent standards and enforcement, incentives for implementing policy, and increasing awareness and education regarding the various environmental issues.

Economic development must be based on consistent, clear environmental policy that is consistent with the principles of sustainability. Polluted cities, overloaded with motor vehicles and the gases they emit, beaches taken over by the military, and energy and desalination facilities placed along the coastline, may create within twenty years an insufferable situation and a third-world quality of life.

Unless appropriate environmental policy, based upon sustainability, is established and implemented, the Israeli economy will be unable to sustain growth. Protection of public space in as densely-populated a country as Israel requires initiative and consciousness-raising among the public, alongside appropriate policy, planning and implementation. Awareness must also be developed with respect to the urban space where most of Israel's residents are concentrated, as well as in the rural spaces that serve as weekend and holiday recreational and vacation sites.

The resulting conclusion is clear: **the sooner we plan, and the sooner we begin addressing environmental problems and investing in their prevention, the lower the costs to the economy and the greater the efficacy.**

Situation Report and Forecast for the "Business as Usual" Scenario

Israel is one of the most densely populated countries in the world. Looking only at the more settled part of the country, from the Be'er Sheva line northwards, Israel is the most densely populated country in the world. Moreover, its natural rate of population growth, including immigration, is among the world's highest, and the highest in the developed world. One striking example: the Bedouin population in the Negev doubles every 13 years, necessarily leading to additional pressure on land use. The growth of other sectors of the population is also high as compared with the Western world.

Population growth causes the diminishing of open spaces and significant overload on infrastructure services for the population. Problems of quality of life, crime due to overcrowding in neglected areas, and damage to nature, ensue. As city density worsens, city residents' desire intensifies to move out of the city to rural areas.

Some of the realms affected by high population density include urban environment, open spaces, transportation and overall infrastructure services for residents.

1. Urban Environment

Most of Israel's population is concentrated in cities, particularly in those of the Dan region (over four million residents). It is projected that by 2020, this area will contain over five million residents. In the context of population crowding in the metropolitan centers, we are witnessing trends of suburban development, creation of closed-off areas for wealthier populations, and the subsequent segregation and separation from vulnerable populations. City density, restricted space and high land cost have many implications; one is the necessity of restricting area per resident, as manifested in the dense construction of high-rise buildings. While this kind of building is indeed a suitable response to space restrictions, it requires appropriate planning and management. A study conducted by the Technion's Center for Urban and Regional Studies found that high-rise buildings which require significant maintenance expenses are suitable for populations of above-average economic means. Buildings populated by less-wealthy populations quickly deteriorate to the level of "slums". Thus we are building poor neighborhoods at a high cost. There is also the problem of appropriate planning of adjacent areas to include parks, playgrounds, and especially parking and transportation solutions, which will be addressed separately.

2. Trends of Suburbanization and Segregation

Cities' increasing density alongside the decline in the level of services they offer, cause movement of the middle-to-upper classes to the suburbs. This process, as seen in Israel and world-wide, produces problems and does not solve the problem of urban living.

Suburbanization, which causes scattering of residential areas, requires private mobility solutions for all family members (to work, school, social activities, etc.). In turn, this produces an increase in the number of vehicles per family, increased roads construction and overload. Suburbanization makes it difficult to properly plan public transportation and to provide adequate services for the scattered population. There is, then, a clear connection between suburbanization and transportation problems.

In addition, a significantly larger land area is needed for suburban residence than in areas of dense construction. We must remember that the diminution of open space is much greater than the built-up area itself. Thus for example, the construction of a small number of homes on a coastal limestone cliff or a Galilee mountain prevents the public from enjoying a hike in the adjacent open space or camping in a quiet area.

The lack of proper planning for dense metropolitan construction and the social deterioration occurring in existing built-up areas produces the construction of towers and closed-off areas for the wealthy. This clearly promotes segregation and the exacerbation of existing gaps in society.

3. Open Spaces

Preserving open spaces refers to a range of areas: nature reserves, the margins of communities that are sometimes used for agriculture, city parks, beaches, the Sea of Galilee, the Dead Sea and the Red Sea.

Open spaces are an essential need for the balance of nature: gas exchange (plants' creation of oxygen and disposal of carbon dioxide), disposal of air pollutants and more. The modern era is characterized by the development of a leisure culture, which is an essential part of the individual's and community's quality of life. Open spaces play a central role in this leisure culture, from the city park near home, through open spaces a short drive away from the city to the larger nature reserves.

Moreover, in Israel, situated at the margins of the desert, there is a greater need and higher demand for green open spaces (see also the agricultural issue). There is a high demand for vacation sites near bodies of water, primarily Mediterranean beaches, the Dead Sea, Eilat and the Kinneret. Increasingly, Israel's beaches are being taken over for the needs of the economy, such as power plants, future desalination facilities, security needs, hotels, construction and more. The unoccupied space per capita is decreasing, and already, overcrowding along the coastline is a deterring factor that impairs enjoyment.

4. Lands for Development

Establishing infrastructure facilities in Israel requires detailed planning and adapting to master plans. Current master plans which include industrial zones are deficient. Establishing a

desalination facility or a power plant that are not adjacent to existing facilities is problematic. The process for approval of the location takes years, and success is not always assured. It is estimated that in terms of land restrictions alone, power plants can be erected in Israel of a maximum additional production capacity of an additional 6,000 megawatts (of the required additional 15,000 megawatts). Desalination facilities are also intended to be placed along the coast. It is already clear, irrespective of the required financial investment, that **development of energy and water systems will be limited, due to land restrictions.** This is also true regarding industrial plants, particularly of the chemical industry; it is already nearly impossible to create a plant of this type in Israel.

The large majority of Israel's population is currently concentrated in the coastal plain, especially in the Dan region. This distribution has many implications, some of them environment-related. Concentration of the population in a huge megalopolis is an environmental and human problem. Population distribution needs to be such that essential areas will not be taken over, and dispersal of open spaces will not be damaged.

There are two aspects to the issue of population distribution. On the one hand, concentration of the population in the Dan region megalopolis is not environmentally desirable (due to the creation of a thermal bubble, a bubble of polluted air, a concentration of urban waste, and difficulty providing an adequate level of environmental services). Additional problems in other realms include security issues.

On the other hand, construction outside existing built-up areas threatens the open spaces. The primary danger is the threat to areas that are essential for preserving nature, landscape or vacation sites. Examples of such areas that are subject to construction plans are Nitsanim, the east Lachish district and the Gilboa.

Continued suburbanization will destroy the little open space that remains in Israel.

5. Transportation and Air Pollution

If appropriate policy is not adopted and implemented, the continuing process of increased air pollution could lead to the collapse of urban areas and the need to halt transportation and industry. It will lead to an increased incidence of disease, including cancerous illnesses (this process is already in evidence today) and overload on the health system. There is alarming data indicating that thousands of citizens take ill every year because of air pollution in the cities and elsewhere in Israel, due to the effects of transportation and industry. Most of the population in Israel is exposed to polluted air, odors and resultant illnesses of one kind or another. The forecast predicts an increase in population density, a doubling or tripling of motorization, and a rise in the standard of living and energy consumption. If a consistent policy is not adopted and enforced, we are destined to live in a cloud of pollution.

Despite the progress made in vehicle technology and car emissions reduction (and Israel's hoped-for position in this development), there does not appear to be any environmental solution in sight for gas emissions, overloaded roads, traffic jams and congestion, without the appropriate development of public transportation.

Due to other industrial air polluters, some areas in Israel have an air pollution problem at levels that cause a nuisance to the population and pose health risks. We have not achieved the accepted implementation level of developed nations, which experience almost no industrial environmental failures. Growing population density and economic activity may cause air quality to deteriorate, therefore careful planning and proper implementation and enforcement are required.

The health expenditures of the population currently exposed to high levels of air pollution, which is liable to develop illness, must be taken into consideration in the overall calculation. Generally speaking, it is important that the environmental "externalities", the hidden long-term costs, be accounted for in economic decision-making.

Beyond local air pollution, there is the climate issue and that of the contribution of economic activity that emits carbon dioxide and accelerates the world greenhouse effect. **The effect of reducing carbon dioxide emissions must be assessed separately, by a model that evaluates the impact in terms of social welfare and GDP. Moreover, as a member of the family of nations, Israel will be called upon to do its part in reducing greenhouse gases which cause global warming.**

6. Garbage, Waste, Recycling and Contamination

Along with increased population density, and even more so, the rise in the standard of living and growing economic activity, waste quantity increases.

Despite progress on many fronts, which has been led by the Ministry of Environmental Protection, there remain many deficiencies. The great majority of **urban refuse** is transferred to landfills. Though now most of this is done in regulated sites, rather than the unchecked dumping that was done until recently, this technology is inferior, and currently prohibited by other developed nations. It takes up land, increases greenhouse gas emission and endangers land and groundwater.

Construction waste is left at sites not subject to advanced standards and discarded alongside transportation routes.

Industrial hazardous and toxic waste is transferred mostly to Ramat Hovav. Israel has no alternative site nor is there the option of transferring the waste to neighboring countries. In the event of a failure at the site, paralysis of the chemical industry in Israel will ensue; alternately,

contamination by hazardous materials will occur. Modern sustainable environmental policy dictates that to the greatest extent possible, industry should first and foremost reduce toxic and hazardous waste, reuse materials in the production process and treat the waste at source, with only the remainder being transferred to Ramat Hovav.

The world trend is to recycle and re-use waste materials, sometimes producing energy in the process. This issue has not been sufficiently promoted in Israel, due in part to the lack of appropriate economic conditions to encourage this trend.

7. Water, Sewage and Streams

Israel took a big step in assuring the water supply, making an impressive start with its water desalination facilities. We must remember, however, that desalination is a very polluting industry in terms of its reliance on energy and greenhouse gas emissions. There is still the serious problem of polluted water sources, especially at the coastal aquifer. The public mistrusts drinking water quality, as manifested in the growing consumption of bottled water. Some of this mistrust stems from the lack of transparency and underreporting to the public about the home water supply.

As compared with other countries, Israel is relatively advanced as regards sewage treatment and re-use of treated water. Although there have been some improvements made in the poor water quality of Israel's streams, much more needs to be done and sustained activity needs to be continued.

8. Global Aspects, Greenhouse Gases

The growing awareness that human activity can be as powerful as the forces of nature and produce far-reaching global changes, raises the need for revolutionary change in energy consumption and in the use of ozone-damaging chemicals (such as bromine and CFC). This route will be, and in fact already is, a prerequisite for participation in international trade. Israel must get on this track. If up till now we have been outside the primary course, as we were not recognized as a developed country for the purposes of the Kyoto Protocol, after the Bali decisions, restrictions and conditions will be imposed on Israel, beginning in 2012. Moreover, as a state with a developed scientific/technological base, Israel may benefit economically from creating the needed technological tools for preventing damage to the global and local environment.

Summary of Situation Report

Israel's environment has indeed been damaged, but some of the damage is reversible. Recently, progress has been evidenced in the government's and public's recognition of the need for environmental protection.

However, if emphasis is not placed on environmental activity, and we continue on the "business as usual" track, we can expect serious deterioration in Israel's environmental conditions. **The environmental realm does not stand alone, but is affected by what occurs in all realms of life: planning, transportation, construction, energy, etc. We require, then, integration and coordination of activities between the various bodies, and appropriate planning and enforcement.** Unless these occur, we will find ourselves in 2028 in an overcrowded country that lacks the space to enable acceptable living and environmental conditions.

Environmental Quality as a Condition for Israel's Advancement and Development

Israel in the Global Market

Israel is on the threshold of joining the organization of developed countries: the OECD. This is a worthy goal and one which will improve Israel's standing in the world economy. However, the OECD countries view economic development as contingent upon the prevention of environmental damage. Israel is very far from the threshold conditions set by the organization in the realm of environmental protection, as regards:

- Treatment of hazardous materials, which is, as stated, deficient in Israel
- Stringent laws and regulations with a defined structure and a comprehensive view
- Per capita investment in renewable energy sources. The investment today in OECD countries is between $18-70 per capita; in Israel it is $0.8 per capita (OECD website data).

The principle of sustainable development dictates economic development along with preservation and protection of natural resources; restraint in consumption that causes over-use of resources; preference of renewable over expendable resources; and more. Israel's non-compliance with international standards and treaties will produce significant difficulties for global integration.

Environmental Challenges Cross Borders

It should be emphasized that in most cases, environmental problems are regional in nature. Pollution does not recognize political borders, particularly in the case of Israel, where almost all water sources are affected by what happens over the border, and where polluted air generated in an Israeli metropolis carries east to Jordan. It is also clear that the issues of the Dead Sea and the

Jordan River have a regional character. Regional interdependence can cause conflicts to flare, but can also help aid in their resolution. The main dilemmas involve the required coordination between Israel and the Palestinians on the issue of environmental protection. There are two aspects to this problem:

- **The political aspect:** Are the Palestinians interested in addressing this issue, even in a state of conflict with Israel? It appears that the Palestinians view environmental issues as a tool in the ongoing struggle against Israel, particularly in light of the fact that they occupy a mountainous area whereas most of the Jewish population is on the coastal plain.
- **The economic aspect**: The Palestinian economy is very poor in comparison to Israel, and cannot allocate many resources to environmental protection. In this case, Israel, along with the international community, must take on most of the economic burden involved in environmental protection.

Another focal point in the regional environmental discussion is the Dead Sea. According to a study conducted by the Samuel Neaman Insititute, annual damage to the environment, to tourism and to roads was estimated at about $90 million a year. It is, therefore, important to rehabilitate the Dead Sea as soon as possible. It appears that linking the Dead Sea rehabilitation project with the water supply project to Jordan, which combines an aspect of urgency and the chance for international funding, may be advantageous in terms of timetables for implementation, as opposed to alternatives in which funding and initiative are exclusively Israeli or regional.

Environmental Technology Development as an Economic Sector

The environmental technologies market is considered to be one of the world's strongest, most rapidly expanding markets. The Samuel Neaman Institute at the Technion, in cooperation with the Ministry of Environmental Protection, conducted a study in 2004 on the state of environmental technology, and its economic potential for Israel and by international comparison.

The scope of trade in the world environmental market is estimated at about $600 billion a year, and its growth rate for the next five years is projected at 5-8% a year. It is a stable, consistently-growing market. However, the scope of Israeli exports of environmental products is less than half a billion dollars a year.

Israel has an excellent reputation as a state in which technology and progress produce achievements. It is a leader in such fields as the prevention of desertification and water technologies (desalination, drip irrigation, recycling urban waste water and more) as well as in alternative energy fields (solar and geothermal energy).

The environmental technology industry is based on innovation, adapting solutions for specific, local problems and inter-disciplinary work. Israel's manpower constitutes a competitive advantage in this realm.

It is important to note the important contribution of new immigrant scientists and engineers, mostly from the former Soviet Union, in the fields of environmental technology, water treatment, pollution, and others. State encouragement of this sector's development will provide employment for many immigrants who have not yet found appropriate frameworks for their activities and abilities. This group of entrepreneurs and professionals, which is abundant in professional knowledge, may facilitate Israel's penetration into the broad Eastern European market. A study recently conducted by the Samuel Neaman Institute estimated that within a decade, the environmental technology sector could become a $7 billion-a-year export sector employing 40,000 employees.

Courses of Action and Environmental Policy

As we have emphasized, Israel's economic development must be based on consistent, clear environmental policy. Polluted cities, overloaded with motor vehicles and the pollutants they emit, beaches taken over by the military or private entrepreneurs and by energy and desalination facilities placed along the coastline, may create within twenty years an insufferable situation and a third-world quality of life. Unless appropriate environmental policy is set and implemented, the Israeli economy will be unable to sustain growth.

The following issues do not constitute a plan of action but are rather conclusions, emphases and an outline for courses of action:

1. Economic growth must take into consideration the economy's restricted resources. In the case of Israel, the limiting resource is land. In order to produce economic growth, we must internalize these limitations and invest in judicious, planned development (for example, by developing sectors that rely on human capital rather than on limited environmental resources).

2. In some cases, harm to the environment cannot be repaired. The damage is often irreversible and in fact, cannot be fixed.

3. In many cases, there is a tendency to separate environmental problems and economic considerations and development policies. Environmental failures usually lead to systems collapse and an inability to continue development. This is true as regards past wrongs, whose rehabilitation requires huge budgets (polluted lands, hazardous construction waste discarded in open spaces, erosion of the coastal cliff, rehabilitation of the Dead Sea and more), and certainly as regards the future as well.

4. The earlier we plan and treat environmental problems and invest in their prevention, the lower the economic cost and the higher the efficacy.

5. The environmental realm is integrative by definition. Water-related programs cannot be separated from those pertaining to energy; both of these are related to problems of air quality, land resources and the means for protecting water of sufficient quality; air pollution problems cannot be discussed without relating them to the character of transportation; energy and water conservation are part of construction policy, the educational system, etc. Therefore, **there is a need for an integrative approach to problems of infrastructure and environment.**

   In some European countries, Holland foremost among them, there is a trend to abolish the "Ministry of Environment" as a separate entity, and rather to assimilate its activity into other government ministries. Initially, the ministry operated within the Ministry for National Planning and Housing. Today, environmental issues are assimilated into all government ministries.

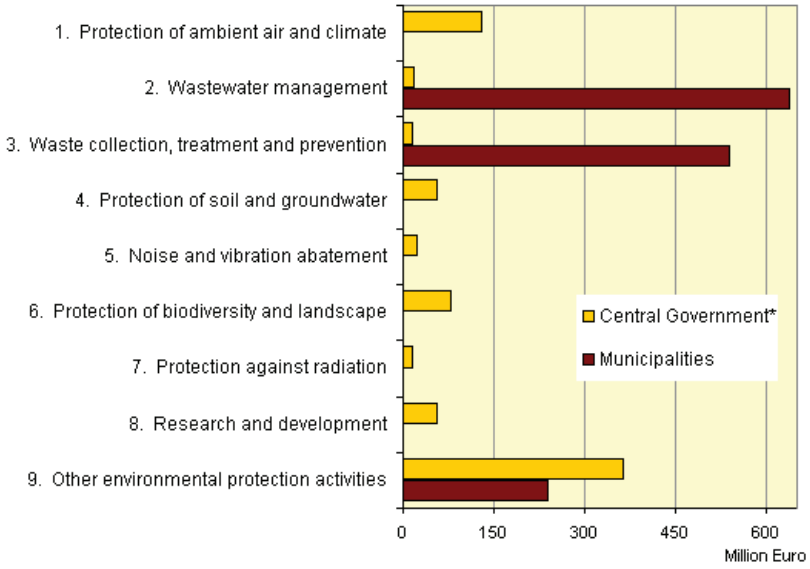
   Inter-ministerial coordination is required on all issues of infrastructure and environment, necessitating the establishment of a joint system for government ministries: "an infrastructures and development cabinet". In Israel's present state, the various government ministries are in competition with and impede one another. There have been a number of successful attempts to create joint bodies, such as that of the Water Authority, which unifies the authorities of various ministries. There is a need to increase coordination between the various functions.

6. Environmental damage has egregious costs – damage to health, depreciation of real estate, damage to crops and more. At the same time, environmental improvement has benefits that can also be quantified in economic terms. Therefore, there is a need to internalize the external costs and benefits that arise from the economy's overall business activity.

7. In order to evaluate Israel's standing in relation to other countries in the world, acceptable measures in the field should be used.

One of the measures for evaluating the investment in the environment is by assessing the **scope of government and private sector expenditures on environmental issues**. In the Western world, there are organized data on government environmental expenditure.

According to the 2006 Eurostat data: in Austria, Holland, and Germany, the annual environmental expenditure is 1.9% of the GNP, in Denmark it is 1.6% of the GNP and in France, 1.3%. The public expenditure on environment in Sweden, in 2004, is presented in the following graph:



Data on the private sector's expenditure for environmental protection are commercial/business data for the most part, and therefore very difficult to estimate.

Required Action

The economy's leaders (central and municipal governments and the private sector) have at their disposal a "policy tool box", which includes planning, legislation and enforcement, education and information, use of economic incentives and more. The series of actions offered below integrates these policy means.

1. **Development of quantitative measures** that measure in an organized way the different parameters and degree of change over time in the environmental realm.

2. **Energy**: implementing clear, consistent policy, along with economic incentives for clean technologies and the development of renewable energy; energy efficiency in industry, commerce and private homes, construction (requirement to meet a green building standard for new construction) and transportation.

   Developing renewable energy requires a policy of setting a real price (not subsidized as is currently done in Israel) for conventional energy, and supporting, at least during the transition phase, the development of alternative sources. This expenditure may be set off by developing exportable products.

   Setting an objective that 20% of electricity production be derived from renewable sources by 2028 (this is the EU's objective for 2020). For Israel, promotion of alternative sources is

especially important, due to its dependency on external energy sources, including strategic risks to fuel supply.

Managing demand for electricity so as to reduce peak demand. Today power plants are established according to market demand at peak consumption. A policy of managing demands can reduce consumption (it has been estimated that consumption can be reduced by 20%, without employing revolutionary measures). Peak consumption may also be reduced by technological, economic and informational means.

Erecting coal-based power plants should be made contingent upon use of environmentally friendly technology, such as gasification.

An additional element is the placement of power plants. As the coastline is already saturated with structures, it will be difficult to erect an additional power plant there. Concentrating electricity production in confined areas will create an air quality problem in those areas.

Plans for future development of the electricity system will require seriously considering the use of nuclear power plants. While we recognize these plants' problematic nature, they are the only technology available today that enables energy production without greenhouse gas emissions.

3. **Planning of Infrastructures and Construction.** It is imperative to preserve space for various purposes, including roads, industry, and residential areas, and to leave sufficiently large, substantial areas for nature, vacationing and leisure, within and outside the metropolis. Prudent planning and use of infrastructures are required, along with coordination between authorities and efficient use of existing and new infrastructures. Even today, there remain almost no areas for the development of industry and essential services, which has caused stagnation in the chemical industry, for example.

   3.1 Judicious **urban planning** that includes dense construction, preserving urban open spaces, keeping an accessible urban site for public infrastructure and maintaining an appropriate urban fabric (without crime, violence or poverty).

   3.2 **Preserving open spaces** – preserving open spaces outside of cities, including agricultural spaces as an essential component of open-space preservation.

4. **The water system and sustainable agriculture**: efficient use of water resources (which will also contribute to energy-saving), reduction of the need for desalination by advancing water-saving solutions and reconstitution of polluted water sources, reduction of fertilizer use and advancement of agriculture in conditions of water scarcity. There is a need to sustain agriculture, if only for environmental considerations. We must plan and develop agriculture that serves as a primary positive environmental factor, while using water carefully and judiciously.

5. **Sustainable transportation:** Transition to mass transit systems (railways, buses and other means), while adapting vehicle and fuel taxation to balance external costs, including conventional air pollutants and carbon emissions, setting standards for energy efficiency of transportation systems, and expanding the use of clean-burning fuels.

6. **National policy for the waste economy, emphasizing sustainable treatment of hazardous waste –** Reduction in quantity of waste produced at source; encouragement of re-use and recycling of materials for secondary use or returning them to the production cycle; increasing manufacturer responsibility, primarily as regards treatment of packaging waste; prohibition against transporting organic waste to landfills, as is accepted in Europe; and advancement of solutions based on separation at the source and recycling.

7. **Education and information campaigns –** Many of Israel's environmental activities depend on substantial life style changes. Investing in education is necessary from the earliest stages of schooling through changes in the habits of the adult population.

8. **Use of economic incentives**

   - Internalization of external costs involved in pollution and environmental damage.
   - Participation in international trade instruments on carbon emissions (Kyoto Protocol and others)
   - Support for R&D of clean technologies in all areas of environmental quality (water, air, land) and for projects to reduce greenhouse gas emissions.
   - Economic support for joint initiatives for implementation of clean technologies in Israel and export of Israeli developments abroad.

Required Investment

Like all other activities, environmental activity requires an appropriate public budget and significant individual expenditure. The current investment in environmental quality is lower than what is accepted in developed countries; in the future, however, it must increase to the rate of OECD states' investment (about 1.5% of the GNP). At the growth rates described in this program, the necessary allocation is feasible, but first and foremost there is a need to **formulate, set and enforce balanced policy.** The public budget must be itemized for the various environmental activities (water, energy, transportation, construction and so forth) and formulated in coordination with all relevant government ministries, such as the Ministry of the Interior; Ministry of Housing and Construction; Ministry of Transportation; the Ministry of Industry, as well as the municipal sector, through the local authorities.