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Environment Policy Committee  
Working Party on Environmental Performance

**ENVIRONMENTAL PERFORMANCE REVIEW OF ISRAEL**

**ASSESSMENT AND RECOMMENDATIONS**

**FINAL**

This document presents the Assessment and Recommendations of the Environmental Performance Review of Israel that were adopted by the Working Party on Environmental Performance on 21 June 2011.

## ASSESSMENT AND RECOMMENDATIONS\*

### 1. Towards sustainable development

#### *Towards green growth*

1. Israel is a small, open economy that grew at a relatively fast pace for much of the 2000s. The population is increasing more rapidly than the OECD average. With a relatively small, densely populated, water-scarce territory and a highly urbanised population, pressures on the environment are often intense.

2. Since 2003, government ministries have been required to prepare sustainable development strategies. This has helped raise environmental awareness in line ministries, and foster analysis of how potentially negative environmental impacts of sectoral policies could be mitigated. However, the quality of ministerial strategies has been mixed, implementation has often been slow, and monitoring and follow-up mechanisms have often been insufficient. The information base on economic aspects of environmental policy is still weak, as are the capacity and requirements for conducting economic analysis that are needed to better integrate economic and environmental decision making.

3. Public expenditure on environmental protection has been at about 1.6% of civilian expenditure since 2000, in line with the share in many other OECD countries. The government budget for environmental purposes has increased significantly over the last decade, but accounts for a minor share of the total government budget. Some dedicated environmental funds, especially the Maintenance of Cleanliness Fund, have provided supplementary and relatively secure sources of funding for environmental protection. However, there is a risk of such funds locking in spending commitments and reducing the overall efficiency of revenue allocation. Their use should be subject to periodic assessment to make sure that their continuation is justified, and that they are achieving their objectives efficiently and effectively.

4. In the context of a fiscal policy that has prioritised the reduction of the public deficit, Israel has made greater use of environmental taxes and other economic instruments, including a landfill tax and a water extraction levy. The inelasticity of demand for private car transport, partly due to inadequate development of public transport, implies that vehicle and fuel taxation is an important source of revenue, but also that it does not substantially affect vehicle usage and associated environmental impacts. Revenue from these taxes (in real terms) increased by more than 50% between 2000 and 2009. In 2009 they accounted for about 3% of GDP and 10% of total tax receipts, among the highest shares in OECD.

5. The vehicle tax is well designed from an environmental point of view, and it has encouraged a shift towards smaller and “cleaner” vehicles. However, it is relatively high compared to taxes on other goods. It could be reduced, for example with a corresponding increase in fuel taxes and road charges to better target actual car and road use. The environmental effect of this measure would be enhanced to the extent that efficient and reliable alternatives to private car transport are made available. Such a shift should be accompanied by measures to compensate poorer population groups for the impact of higher fuel prices. Taxes on transport fuels are relatively high in comparison with those in many other OECD countries. Gasoline-diesel tax parity has nearly been achieved. It is commendable that the excise duty on coal was increased five-fold in 2011, which will encourage a shift away from coal in electricity generation. However, taxes on energy products for stationary purposes should better reflect the fuel carbon content, as well as other environmental externalities.

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\* The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

6. A number of support schemes and tax breaks currently in place provide environmentally harmful incentives to production and consumption. In particular, diesel for commercial use benefits from partial tax rebates; support to agriculture is mostly coupled with production; and car allowances for banking and civil service employees and the tax treatment of company cars overly encourage car ownership and use. The Ministry of Environmental Protection should be commended for undertaking a first study of environmentally harmful subsidies in 2011. Removing environmentally harmful subsidies and expanding the use of green taxes could contribute to the government's objectives of reducing public debt while cutting income taxes.

7. Israel has sizeable innovative and high-tech sectors and strong potential in the field of environmental technologies. The "clean-tech" sector has been growing in recent years, mainly driven by increasing global demand, and is specialised in water and renewable energy technologies. Progress in this area has been supported by environment-related policy measures, such as increased water prices and renewable energy support, increased public R&D funding and targeted assistance programmes. Nonetheless, domestic demand for environmental technologies is generally low, partly due to the relatively slow implementation of environmental regulations and standards. The demonstration and commercialisation of new environmental technologies could be better supported. Also, the clean-tech industry is made up of relatively small businesses that have difficulty accessing credit and venture capital.

8. A number of measures have been taken to encourage good environmental performance in the business and financial sectors. Nevertheless, the environmental review criteria and procedures for Israel's trade and investment policies and practices should be strengthened. This includes future Free Trade Agreements, as well as grants and insurance coverage provided to industry under export credits programmes.

### **Recommendations**

- Develop a whole-of-government approach to sustainable development and green growth; fully integrate environmental and green growth considerations into the government's development strategies; establish clear performance monitoring and follow-up mechanisms.
- Enhance the use of economic assessment tools in developing public policies, and ensure that environmental costs and benefits are fully taken into account; prepare consistent evaluation guidelines for this purpose; improve the scope and quality of statistical information concerning the economic aspects of environmental policy (notably expenditure, revenue, employment, and eco-industries).
- Follow up on plans to introduce environmentally related taxes and economic instruments (notably the proposed air emission levy, the coastal and marine protection charges, and the water pollution levy), and gradually remove tax concessions that are potentially harmful to the environment (including on the water extraction levy for farmers and on the diesel excise duty for commercial use).
- Review the tax treatment of company cars, with a view to eliminating the perverse incentives that result in increased car use and environmental impacts; replace the current car allowance for some services and public employees with other forms of compensation that are not linked to car ownership.
- Strengthen the mix of policies to support the commercialisation and diffusion of environment- and climate-related technologies, including more effective and efficient implementation of environmental policies, well-designed public procurement and targeted financial support.

### *Environmental management*

9. Over the last decade, Israel has adopted a number of important environmental laws including the Protection of the Coastal Environment Law, the Polluter Pays Law, and the Clean Air Law. While these laws have strengthened the environmental regulatory framework, their development has been generally driven by NGOs and Knesset members rather than a considered environmental legislative strategy on the part of the government. This has contributed to the fragmentation of Israel's primary environmental legislation. However, in recent years the government has played a more proactive role in the development of environmental legislation. Despite recent efforts to introduce integrated environmental permitting, the regulatory focus continues to be on individual media and end-of-pipe pollution control. Moreover, the widespread lack of regulations needed to implement the primary environmental laws weakens the legal framework within which individual businesses operate.

10. Israel has a highly centralised system of environmental governance, with officials of the Ministry of Environmental Protection (MEP) having to address many, including relatively minor, environmental issues. This leads to inefficient use of the Ministry's limited human and financial resources. Although local authorities have recently been delegated certain permitting and enforcement powers for facilities that have low environmental impact, some smaller municipalities do not presently have the capacity to exercise these powers. The central government provides significant financial support and training to the existing local environmental units, but has limited influence over their performance in environmental policy implementation.

11. The MEP is working to expand the scope and quality of environmental inspections, which has led to increased compliance levels. It also actively engages citizens in environmental compliance monitoring through a system of recruiting and training of volunteer "cleanliness trustees". However, most site inspections by the MEP's main enforcement arm, the Green Police, remain sporadic and superficial. The low effectiveness and efficiency of inspections are exacerbated by the poor enforcement of self-monitoring requirements for regulated entities: very few businesses submit regular reports to the competent authorities, and most reports are not verified.

12. Israel has started important work to make environmental enforcement more rapid and proportionate to non-compliance through the development of a system of variable administrative fines for environmental offences under a broad range of environmental laws. Collection of existing fines has improved. Incorporating the recovery of economic benefits of non-compliance in environmental monetary penalties, as currently envisaged by the MEP, would align Israel with best international practices. At the same time, the environmental liability system could be strengthened: regulated entities responsible for pollution rarely bear the costs of environmental remediation.

13. Israel has made significant advances with respect to non-regulatory environmental policy instruments. The government has facilitated the adoption of voluntary environmental management standards and eco-labelling. It has also invested heavily in environmental education and has recently adopted a regulation allowing free public access to a wide range of environmental information.

14. While Israel has an elaborate system of strategic environmental planning, the environmental authorities operate without an adequate performance management framework. The effectiveness and efficiency of their activities are not measured, nor are they linked to planning and budget allocation. Although measuring environmental results is a well-recognised challenge, Israel could draw on the positive experience of OECD countries such as the United Kingdom and the United States to develop outcome indicators of environmental policy implementation, including compliance assurance.

**Recommendations**

- Implement integrated (cross-media) environmental permitting for facilities with high environmental risk; issue such permits based on advanced, process-related technological and management solutions, and using procedures that are open to public participation.
- Strengthen environmental policy implementation at the local level by making government subsidies to municipalities contingent on the establishment of viable environmental units (including units involving co-operation among local authorities), and by implementing compulsory training for such units.
- Strengthen the system of self-monitoring by requiring all facilities subject to such requirements to report regularly to the environmental authorities; enhance the capacity of environmental inspectors to undertake multi-media compliance monitoring and verification.
- Reinforce environmental liability for damage to natural resources by: expanding the use of administrative clean-up orders, strengthening legislative provisions (including those in the Prevention of Land Contamination and the Remediation of Contaminated Lands bill) for the recovery of remediation costs from responsible parties, and applying such provisions more vigorously.
- Introduce a system of performance indicators to monitor the effectiveness and efficiency of environmental policy implementation in the framework of results-oriented planning and budgeting.

***International co-operation***

15. Israel's international environmental co-operation activities have increased appreciably since 2000 and are carried out at both bilateral and multilateral levels. Israel has demonstrated its willingness to fulfil its international environmental commitments, and to contribute its substantial expertise to help meet international and regional environmental challenges. It is a party to most major global environmental agreements, and has a good record of providing data and progress reports as required under these agreements, as well as transposing key elements into domestic law. To inform and support its domestic responses to environmental challenges, it has drawn effectively on recommendations, procedures, guidelines and resource support related to various international programmes. However, Israel has not yet ratified some important multilateral environmental agreements, regional conventions and associated protocols. These include global agreements on prior informed consent, persistent organic pollutants and biosafety, together with recent protocols under the Mediterranean Action Plan of the United Nations Environment Programme (UNEP).

16. Geopolitics continues to constrain Israel's ability to participate with its immediate neighbours, and with some other countries, in collaborative work on environmental issues. This affects its ability to participate fully in international organisations and regional groups, and to propose and pursue regional and transboundary initiatives. Nonetheless, during the past decade Israel has become a member of, and has actively participated in, the UNEP Governing Council and the United Nations Commission on Sustainable Development. As a new OECD member, it has moved rapidly to adjust its policies and procedures to conform with OECD legal instruments and policies. It has also increased its environmental co-operation with the European Union and in the Mediterranean region, notably by actively participating in the Mediterranean Action Plan and by joining the Mediterranean Climate Change Initiative.

17. Effective management of transnational rivers and aquifers (the main sources of Israel's water supply) has also been affected by the specific geopolitical situation. Ever-increasing demand for freshwater by the riparian parties has been responsible for water quantity and quality problems, and for the exacerbation of disputes over water rights and responsibilities. However, increased effluent reuse and seawater desalination has eased some of the pressures on water supply.

18. During the past decade, Israel has made significant progress in strengthening coastal and marine management, managing the living resources of the Mediterranean Sea, curtailing marine pollution and being prepared to respond to oil spills. Comparatively small oil spills and the dumping of contaminated bilge water are now exceptional events. There are fewer pollutant discharges into marine waters from municipalities and land-based industries than some years ago, but these discharges have not been eliminated. The 2004 Coastal Environment Protection Law imposes strict regulations on development in the coastal region. Beaches are cleaner than at any time in recent decades as a result of the Clean Coast programme. However, in certain coastal areas and harbours, pollution, largely discharges of industrial and municipal wastewater into rivers, continues unabated.

19. New measures have been introduced to curtail trade in endangered species of plants and animals, and Israel has joined the International Whaling Commission. It has made considerable progress to meet requirements for the phase-out of ozone-depleting substances under the Montreal Protocol on Substances that Deplete the Ozone Layer. Notably, production and use of methyl bromide, an economically valuable substance of which Israel is one of the world's largest producers, have been dramatically reduced. Efficient use of funding for international environmental efforts will be essential if Israel is to fully meet its various goals and commitments. Funding priorities should include: improving the management of internationally recognised conservation areas; and strengthening monitoring, inspection and enforcement related to marine pollution, illegal trade in ozone-depleting substances, endangered species and hazardous waste.

20. Official development assistance (ODA) as a share of gross national income (GNI) is significantly less than the contributions of other OECD members, as well as those of most other middle-income countries. The share of its ODA allocated to environmental management is relatively small. A significant increase in financial support for the latter would be a sound investment, as Israel has demonstrated that it can carry out highly effective environmentally related development co-operation activities when resources are available. Such activities have focussed, in particular, on natural resources management, including management of water resources, in Middle Eastern and African countries.

### **Recommendations**

- Expedite ratification of major global and regional environmental conventions and protocols, particularly in the areas of chemicals, waste, biosafety, biodiversity and protection of the Mediterranean Sea.
- Mainstream and strengthen the environmental component of official development assistance within an expanding volume of development aid.
- Strengthen the government's monitoring, inspection and enforcement capabilities in order to curtail the illegal introduction of alien species and trade in endangered species, hazardous waste and ozone-depleting substances.
- Continue to explore avenues of co-operation with neighbours on pressing marine pollution and transboundary water and waste management problems, particularly at sub-national level and through non-governmental channels, as well as through accession to relevant international agreements.

## 2. Selected issues

### *Water*

21. Israel's limited water resources are under severe pressure due to its geo-climatic location, rapidly expanding population, growing economy, and water pollution loads. Responding to these threats and opportunities, Israel has introduced some ambitious water policies and has been at the forefront of developing efficient water technologies.

22. Pressures on water resources have intensified in recent years, as Israel has faced the worst water crisis in its history. From 2003/04 to 2010/11, the country experienced almost seven consecutive years of drought. Water consumption exceeds the natural rate of replenishment, while the intensity of freshwater use is extremely high by OECD standards. Groundwater is being used unsustainably and a potentially serious pollution problem (including salinity and nitrates) is developing, particularly in the Coastal Aquifer. Climate change is further intensifying pressures on water resources.

23. Israel has pioneered water-efficient technologies such as drip irrigation, soil aquifer treatment for reuse of treated wastewater, brackish and seawater desalination, and large-scale filtration of lake water. Recently, there has been increasing reliance on economic incentives and other instruments to reduce demand for scarce water resources. Practically all water consumption is metered. Use of "smart metering" is growing. Water prices have significantly increased, and rising block tariffs provide incentives to conserve water resources. However, further steps could be taken to reduce household consumption in line with good international practices. A 40% increase in domestic water prices, introduced in January 2010, was a bold step which will help to address this issue. A pollution tax for direct discharges of effluent to seawater is currently under discussion.

24. Overall, Israel has achieved full recovery of the costs of supplying water services and this is an established policy principle, including for the agricultural sector. However, about 35% of agricultural uses of potable and reused water are still cross-subsidised by the household sector and receive a relatively large share of public support. The 2006 Farmers' Agreement contains a commitment to achieve an agreed target price in the direction of full cost recovery by 2017.

25. As the water crisis has deepened, more emphasis has been placed on increasing supply. Israel has embarked on an ambitious policy of seawater desalination, with the aim of supplying 750 million cubic metres (half the expected potable water needs of the urban, industrial, and agricultural sectors) by 2020. Its desalination plants are among the most energy- and cost-efficient in the world. However, a planned substantial increase in the production of desalinated water is based on a number of key assumptions. First, it is assumed that the agricultural sector can absorb steep increases in the cost of water as full cost recovery of supply is introduced. Second, no major change in the cost of producing desalinated water is foreseen in Israel's water supply outlook. This may be optimistic, as the price of desalinated water is linked to energy costs, which are important for both production and long-distance transport. Increasing energy prices could put the economic balance, and/or the political will to ensure full cost recovery, to the test. Although some studies have been carried out, the environmental and health effects of seawater desalination (*e.g.* impacts on coastal biodiversity, health effects of desalinated water's low magnesium content) require further assessment.

26. Water governance has improved since 2007 with the creation of the Water Authority. It is responsible for the regulation of the entire supply-recovery cycle of water and oversees the national water grid, by means of which water may be transported almost anywhere in Israel (upstream and downstream). This situation is unique. In 2010, 10 million cubic metres of water were allocated for environmental purposes. Nevertheless, centralised management of water resources has not given sufficient weight to

environmental considerations. River basin management authorities have been established, although their performance remains uneven. Environmental quality objectives have not been established for rivers. Major rivers, which once supported rich aquatic and wetland ecosystems, became seriously depleted and polluted. However, restoration and rehabilitation programmes have resulted in steady water quality improvements over the past 5 years. The reuse of treated domestic wastewater for irrigation means that most of this water is lost to evaporation and plant transpiration, leaving virtually none for river flows and aquifer recharge. However, addressing this issue would require greater use of potable water.

### **Recommendations**

- Gradually increase the agricultural and industrial sectors' share in financing the full costs of water infrastructure, taking account of the positive externalities associated with water supply; establish targets for domestic water consumption in line with best practices in western European countries.
- Continue to carefully assess the economic assumptions and the environmental and health impacts of producing and using desalinated water; internalise environmental costs in the price of desalinated water.
- Consider broadening the use of economic instruments for water management, including: expanding the scope of the pollution tax to effluent discharges in freshwater and aquifers; ensuring that abstraction tax rates reflect water scarcity; introducing a pesticide tax with rates reflecting pesticide toxicity; and trading water quotas among different agricultural producers and, in the medium term, with other water users.
- Consider how local ecological conditions and minimum river flows could be better reflected in decisions on water allocation among sectors and to nature.
- Define water quality objectives for all stretches of rivers, and issue discharge and abstraction permits accordingly.

### ***Biodiversity conservation and sustainable use***

27. Despite its relatively small size, Israel has an exceptionally high degree of biological diversity. This is largely due to its location at the interface of Africa, Asia and Europe. It is also important for migratory birds and marine species. Its biodiversity policies therefore affect ecosystems in other countries, as has been recognised by Israeli policy makers.

28. One of the country's unique features is that its land is publicly owned. How land may be used is determined by national land use planning policy. Within this framework, a relatively large share of the total land area is protected. About 20% of land area is currently classified as nature reserves (primarily for nature conservation) and 1% as national parks (primarily for conservation of heritage and archaeology). Although the number and extent of protected areas are increasing, they do not adequately represent the country's diversity of habitats. None of the protected areas is large enough to preserve entire ecosystems. Their small surface area and lack of buffer zones leave them vulnerable to human activity. Biosphere reserves are being identified to help reduce habitat fragmentation.

29. The current status of biodiversity presents a mixed picture. Israel's biodiversity is subject to serious pressures from several sources: habitat fragmentation, the introduction of invasive species, over-exploitation of natural resources and pollution. Demographic changes, economic development and

climate change are the main drivers of these pressures. In response, Israel has made progress in reducing pressures on aquatic ecosystems from river pollution and in enhancing habitat protection through an impressive afforestation programme. On the other hand, the condition of coral reef habitats has deteriorated and the size of coastal ecosystems has decreased. The number of threatened mammal species is relatively high compared to that in other OECD countries, while the status of other species is more favourable.

30. The National Biodiversity Strategy (NBS) adopted in 2010 provides a comprehensive framework for monitoring, conservation and sustainable use of biodiversity. The NBS recognises that economic development and biodiversity conservation objectives are not incompatible. This represents an important shift from the traditional conservation approach followed in Israel and many other countries for a number of years. The need to mainstream biodiversity in all policy domains and economic sectors is explicitly recognised. The NBS also signals a clear shift from previous biodiversity policy, in that it aims at the conservation of ecosystems and the promotion of biosphere reserves and ecological corridors rather than focusing on single species.

31. The NBS has established guidelines and objectives. Targets will be developed in the future. Taking account of such targets in legislation or government decisions would support effective implementation. The existing information system and indicators provide a sufficient basis for management purposes. However, they would be more effective if the information base were more comprehensive and were expanded to include the economic aspects of biodiversity conservation. A more systematic analysis of future trends would also strengthen the basis for biodiversity policy development, including the development of targets.

32. The NBS recognises the role that economic instruments can play both in internalising environmental costs in economic activities and in providing incentives for sustainable use of biodiversity resources. Greater use should be made of such approaches to help mainstream biodiversity in economic and sectoral policies (*e.g.* in agri-environmental schemes by creating markets for biodiversity conservation and sustainable use, introducing tradable fishing quotas and establishing levies for coastal and marine protection). Policy and institutional co-ordination remains a key challenge. Co-ordination with climate change mitigation and adaptation policies, including possible trade-offs, is of growing importance. Israel has a range of useful educational and public awareness programmes, which should be continued and strengthened.

### **Recommendations**

- Undertake a comprehensive national assessment of Israel's ecosystems and biodiversity, including their economic value; analyse how the main pressures on biodiversity are likely to evolve and how they could be mitigated by alternative policies.
- Establish measurable biodiversity targets; consolidate the national biodiversity monitoring system to measure progress in achieving these targets and to support future policy development.
- Strengthen and broaden biodiversity conservation in and around nature reserves, *e.g.* by establishing buffer zones, ecological corridors and biosphere reserves.
- Identify specific measures to reduce the introduction of invasive alien species from all sources.
- Expand the use of market-based instrument such as fees, charges and payments for ecosystem services in key economic sectors, such as housing, infrastructure development, agriculture, fishing and forestry; examine ways to create new market opportunities to further involve the private sector in biodiversity protection, *e.g.* in the tourism sector.

- Assess how trade-offs between biodiversity and other key policy areas, notably climate change, should be addressed in implementing the National Biodiversity Strategy and the national plan for adaptation to climate change.

### *Climate change and air quality*

33. Between 2000 and 2008, Israel's greenhouse gas (GHG) emissions grew by about 5%, mainly due to rapid population and economic growth and the associated increase in energy demand, particularly that of electricity. However, the emission and energy intensities of the economy are close to the OECD average, while the energy supply remains more carbon intensive than in most OECD countries. This is largely because electricity is generated entirely within Israel, using almost exclusively fossil fuels. Historically, coal and oil have dominated this mix. The discovery of off-shore gas and its progressive use for electricity generation since the mid-2000s have helped mitigate the increase in GHG emissions and contributed to a decrease in emissions of some air pollutants. GHG emissions are expected to continue increasing as a result of rapid economic growth. Some estimates suggest that, under business-as-usual assumptions, they will double by 2030 compared to the 2005 level.

34. Since it is not a party to Annex I of the Kyoto Protocol, Israel is not committed to a binding GHG emissions reduction target for the period 2008-12. Perhaps as a result, it has made a relatively late start in formulating a climate change mitigation policy. For much of the 2000s its approach was piecemeal. However, in 2009 it set the target of reducing GHG emissions by 20% by 2020 compared with a business as usual scenario. This was a positive step forward, although reaching the goal will entail a further increase in GHG emissions. While a national action plan for reducing GHG emissions was prepared, some uncertainty remains concerning the definition of both the target and the strategy to meet it, which may compromise their effectiveness in guiding and motivating implementation. Not only is the target defined against a business as usual scenario rather than in absolute terms, but it is not anchored in legislation. While the contribution of the electricity sector to the achievement of the target is reasonably clear, this is not the case for other sectors. An inter-ministerial committee, chaired by the Ministry of Finance, was established to oversee the implementation of the action plan and identify additional measures needed to achieve the GHG emissions reduction target. However, a more open and independent oversight mechanism could provide a broader basis for discussing the policy adjustments that may be needed to achieve this target. There is also room for improving data collection and reporting of GHG emissions trends to support decision-making.

35. The main GHG emissions reduction measures are being developed at the sector level. According to the authorities' current plans, mitigation measures in the electricity sector will account for most of the targeted emission reductions. As regards energy efficiency, there have been few effective initiatives over the review period. Hence, the National Energy Efficiency Programme, adopted in 2010, marks an important step; it aims to achieve a 20% reduction in projected electricity consumption by 2020. The main implementation instrument, the Energy Efficiency Fund, will need to be carefully designed to meet this objective. Opportunities exist to improve the energy performance of buildings through better performance standards and provision of information to households.

36. For many years, Israel has promoted solar water heating, which now accounts for 80% of all water heating requirements. However, renewable energy sources account for only a minor share of electricity production, well below Israel's objectives. The implementation of feed-in tariffs and production quotas has improved performance considerably. A number of obstacles need to be addressed if the goal of supplying 10% of electricity with renewable energy by 2020 is to be achieved. In particular, a variety of financial incentives are being used to support the use of renewables (with potential overlaps) while land use rezoning and permitting procedures are complex and time-consuming.

37. Transport demand and private car ownership increased considerably in the 2000s. As in many other OECD countries, transport is a major source of GHG and air pollutant emissions. A number of measures have been introduced to reduce emissions from transport. Among them are the adoption of European standards for imported vehicles, fuel quality and vehicle tests. In 2009, the vehicle purchase tax, which has long been an important source of tax revenue, was restructured and is now linked to emissions of GHG and air pollutants. As a result, the average emission performance of new vehicles has improved, especially with regard to emissions of local air pollutants such as NO<sub>x</sub> and particulates. Nevertheless, the carbon efficiency of new cars is still well below the EU average. The introduction of an electronic toll system on the main highway to Tel Aviv is a positive step. If successful in reducing congestion and emissions, it provides a basis for considering the extension of road pricing to other congested motorway stretches and to metropolitan areas. Nevertheless, there is scope to improve the economic incentives to car use. Further efforts are also needed to integrate transport and land use planning and to improve alternatives to private car use.

38. Many measures to reduce GHG emissions would also help reduce emissions of the main air pollutants, and vice versa. Although SO<sub>x</sub> and NO<sub>x</sub> emission intensities have decreased since 2000, mostly due to the switch to natural gas and improved fuel quality, they remain well above the respective OECD averages. Overall emissions of major air pollutants tended to decrease or stabilise during the 2000s, but there are still air pollution hotspots at industrial sites. Ambient air concentrations of NO<sub>x</sub>, PM<sub>10</sub> and ozone continue to exceed limit values in major metropolitan areas, mainly due to heavy transport pressures. The implementation of the Clean Air Law as from 2011 represents a major step towards consolidating the regulatory framework for air pollution from both stationary and mobile sources. In addition, the Law creates a legal basis for imposing air emissions levies on large industrial facilities requiring an emission permit. The air quality monitoring network is among the densest in the world and data are made widely available to the public. However, lack of uniformity in data control among the different monitoring bodies may hinder data reliability.

### Recommendations

- Consider expressing the target for reducing GHG emissions by 2020 in absolute terms and making it legally binding; fully integrate climate, environmental and health considerations into the government's long-term energy and transport policies.
- Set up a system to monitor the implementation of GHG emissions reduction measures; provide an annual assessment to the Knesset on progress in achieving targets, preferably by an independent body, and periodically (*e.g.* every three years) propose recommendations to adjust policy measures.
- Consider introducing an economy-wide carbon tax, or adjusted excise duties on fossil fuels, to reflect an appropriate carbon price.
- Rationalise the financial incentives for renewable energy projects, taking account of the full range of costs and benefits of renewables; provide consistent guidelines on the types of land used for, and the conditions that apply to, such projects; streamline the associated planning and permitting processes.
- Ensure that the Energy Efficiency Fund targets projects that are justified environmentally and economically by: establishing appropriate criteria for identifying eligible projects; applying instruments to provide targeted support and to leverage other resources; and establishing an independent mechanism to assess progress.

- Introduce mandatory minimum energy performance standards for buildings, and ensure that information on building energy performance is available to consumers.
- Better integrate transport and land use planning; further develop public transport networks; improve the integration of public transport services and networks.
- Extend the use of road tolls on congested motorway stretches and consider introducing congestion or pollution charges in major metropolitan areas.
- Using the legal basis provided by the Clean Air Law, introduce an air emissions levy targeting priority pollutants emitted by large and medium stationary sources.
- Building on the voluntary emissions reporting scheme, establish a mandatory Pollutant Release and Transfer Registry that includes GHG emissions; strengthen data quality control across the various ambient air quality monitoring networks.

### *Waste management*

39. Demographic and economic trends have resulted in an increase of about 15% in municipal waste generation in Israel over the last decade, but the growth was relatively decoupled from the growth of GDP and private final consumption. Despite new policy initiatives in the second half of the 2000s, municipal waste generation per capita in 2009 was among the highest in OECD countries. Throughout the decade Israel continued its efforts to exercise adequate control over unregulated waste dumping, a major problem in the 1980s and 1990s. Significant improvements have been made to ensure safe operation of landfills, which remain the principal means of municipal waste disposal. However, challenges remain and strong local opposition has impeded the opening of new landfill sites.

40. Two recent policy initiatives provide a basis for developing a modern waste management policy, in line with good international practices. The 2006 Sustainable Solid Waste Management Master Plan identified priorities, set ambitious goals for waste recovery and recycling, and led to the introduction of a set of new policy instruments including a landfill levy and Extended Producer Responsibility schemes. In 2010 the Recycling Action Plan reinforced some of these measures and provided a basis for separate waste collection and recycling for household waste, with an emphasis on organic waste which could support greater use of composting, anaerobic digestion and waste-to-energy. The Action Plan established an ambitious target of reducing the share of municipal waste in total waste subject to landfilling from the current 87% to 50% by 2020.

41. Municipalities have the main responsibility for delivering waste services. Private operators account for 20% of waste collection, and there is evidence that in some cases their operations are more efficient than municipal utilities. A greater role for the private sector in this area has been blocked by labour union opposition. Nevertheless, the private sector is playing a bigger role in waste treatment and disposal. Introducing more competition between public and private operators across the range of waste management activities, with appropriate regulation, has the potential to reduce costs and improve service quality. This should be supported by measures that allow for greater recovery of costs, including: waste collection charging based on the real costs of the service; gradual introduction of weight- or volume-based charging for mixed waste; and increased use of composting, anaerobic digestion and waste-to-energy solutions.

42. The introduction of Extended Producer Responsibility (EPR) for beverage containers and used tyres has resulted in higher rates of collection. A similar system for packaging was introduced in 2011 and a voluntary system has been introduced for waste paper recovery and recycling. These systems could be

extended to a range of other products (*e.g.* batteries, waste electric and electronic equipment, vehicles), as has been done in other countries. However, the system design should address existing organisational and recycling market failures and ensure that efforts to reduce environmental impacts from post-consumer products maximise social welfare. Further efforts are needed to make the construction industry responsible for its waste. However, so far the EPR schemes have not resulted in a significant increase in the rates of recycling and recovery of municipal waste. One of the main obstacles is the low cost of landfilling. Introduction of the landfill levy and a recent increase of its rate were important steps to address this problem, but so far it has not raised the cost sufficiently. Nevertheless, the revenues generated by the levy have been used to support several pilot projects in municipalities.

43. Good progress has been made in managing industrial waste, of which 60% is recycled. Generation of hazardous waste has grown rapidly (by 33% between 2000 and 2008) while capacity to treat and dispose it safely has not kept pace. Lack of adequate waste collection infrastructure in some areas has led to landfilling of hazardous (*e.g.* medical) waste in municipal landfills. The regulatory framework for hazardous waste management is fragmented and needs to be consolidated in a new law. Co-operation with the business sector could be strengthened, with a view to developing voluntary initiatives and preventive actions.

44. Contaminated soil has been identified at a number of locations. It is largely the result of past industrial and agriculture activities, or of inadequate waste disposal and treatment. Some measures have been taken to identify the most severely polluted sites and to formulate clean-up requirements. Technical remediation measures have also been implemented, including at one of the most affected sites at the Ramat Hovav industrial zone in southern Israel, and the site of the country's main hazardous waste disposal facility. However, progress has been slow due to the high costs of the clean up and unresolved issues concerning liability for past pollution. Resolving these problems will take decades. In the short term, a more comprehensive framework should be established for identifying priority problems that pose the greatest risk to human health and the environment. The rapid adoption of the law on the Prevention of Land Contamination and the Remediation of Contaminated Land should provide a good basis for comprehensive rehabilitation efforts.

### **Recommendations**

- Review current arrangements for the management of waste, including hazardous waste, and consolidate them in a comprehensive and coherent new policy, possibly a new law, and an action plan.
- Strengthen national and local efforts to address remaining problems with unregulated waste disposal, in particular: identify alternative landfill locations for Jerusalem's waste disposal; strengthen responsibilities of the construction sector for treatment and safe disposal of construction and demolition waste; and accelerate measures that would help to discontinue direct discharges of sewage sludge to the Mediterranean Sea.
- Increase the level of the waste collection component of the municipal property tax to reflect the real costs of the service; gradually introduce volume- or weight-based waste disposal fees for mixed waste; identify and exchange good practice approaches for waste management among municipalities.
- Building on pilot projects, roll out the programme for separate collection of dry and organic waste to all municipalities; develop the related treatment infrastructure, including a wider use of waste-to-energy solutions, and engage the private sector in this effort.

- Broaden Extended Producer Responsibility systems to other priority waste streams, including batteries, waste electric and electronic equipment, and vehicles; strengthen the collection and safe disposal of used oils and car oil filters; ensure that their design and implementation is effective and efficient.
- Develop a comprehensive legislation on liability for past pollution and a programme for the remediation of contaminated sites, providing adequate resources and using risks to human health and the environment to prioritise actions.