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**Policy issues: State of the environment**

**STATE OF THE GLOBAL ENVIRONMENT AND CONTRIBUTION OF THE  
UNITED NATIONS ENVIRONMENT PROGRAMME TO EFFORTS  
TO ADDRESS ENVIRONMENTAL CHALLENGES**

**Report of the Executive Director\*\***

**Addendum**

**Environmental situation in the Occupied Palestinian Territories**

Summary

The present document contains information on the steps taken to implement decision SS.VII/7 of 15 February 2002, of the Governing Council of the United Nations Environment Programme (UNEP), on the environmental situation in the Occupied Palestinian Territories. The document also contained, in the annex, recommendations by the UNEP desk study team which have been produced as submitted without any formal editing.

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\* UNEP/GC.22/1.

\*\* The document was submitted late to the conference services without the explanation required under paragraph 8 of General Assembly resolution 53/208 B, by which the Assembly decided that, if a report is submitted late, the reason should be included in a footnote of the document.

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## Introduction

1. In February 2002, at its seventh special session, the UNEP Governing Council unanimously adopted decision SS.VII/7 requesting the UNEP Executive Director to designate a team of UNEP experts to prepare a desk study outlining the state of environment in the Occupied Palestinian Territories and to identify areas of major environmental damage requiring urgent attention.
2. The decision also requested UNEP to undertake field studies, as deemed necessary, with the objective of proposing remedial measures, to follow up on the findings and recommendations of the study and to assist the Palestinian Ministry of Environmental Affairs in its efforts to address urgent environmental needs.
3. High priority was given to the implementation of the decision, and one month later, during the preparatory ministerial segment of the fourteenth session of the Arab League in Beirut in March, 2002, the Executive Director presented the decision in his address to the ministers of finance and economy, and invited all the member States of the Arab League to cooperate with UNEP in working towards achieving a scientifically sound desk study with a forward-looking approach.
4. The geographical scope of the Occupied Palestinian Territories is addressed in several resolutions of the United Nations General Assembly and the Security Council. The main focus of the UNEP desk study was the areas where there are acute environmental problems.
5. The desk study is based on a review of available, relevant studies and interviews with officials, experts, academics, municipal officials and non-governmental organizations. It lists priorities and proposes recommendations for solving environmental problems. The desk study addresses environmental issues identified as the most vital for the environment in the region: water quality and quantity; solid waste; waste water; hazardous waste; biodiversity; land use and land-use change; and environmental administration.
6. The Executive Director of UNEP visited the Occupied Palestinian Territories and Israel from 13 to 16 July 2002. He met with Mr. Yousef Abu Safieh, Minister of the Palestinian Higher Agency for the Environment and with the Israeli Environment Minister Mr. Tzachi Hanegbi. He also met with the President of the Palestinian Authority and Chairman of the Executive Committee of the Palestinian Liberation Organization, Mr. Yasser Arafat and with the Israeli Prime Minister Mr. Ariel Sharon. A framework for the desk study was agreed on with both parties.
7. It was agreed that the desk study would list priorities and propose recommendations for solving environmental problems, based on a forward-looking approach.
8. The Executive Director of UNEP invited Mr. Pekka Haavisto, former Minister of Environment and Development Cooperation of Finland, to lead the desk study team of eight highly qualified experts.
9. Following the visit by the Executive Director, a preparatory UNEP expert mission to Israel and the Occupied Palestinian Territories took place from 15 to 22 August 2002.
10. As part of the desk study, UNEP convened a one-day advisory meeting on 23 August 2002, to gather information from a range of sources, in a neutral setting. The objective of the meeting was to provide information to participants on the UNEP desk study, and to obtain information from other organizations, including organizations within the United Nations system, on their past and ongoing relevant activities. Participants included representatives of international organizations, international non-governmental organizations and environmental experts.
11. The UNEP desk study team visited the Occupied Palestinian Territories and Israel, between 1 and 11 October 2002. The team included in-house experts, as well as experts contracted from UNEP's collaborating centres and other international environmental institutes. The experts covered the following topics: water quantity, water and soil quality; waste water; solid waste, hazardous waste; environmental administration; land use and biodiversity.

12. During the mission, the desk study team met a broad range of Palestinian officials, non-governmental organizations, academics, as well as municipal officials working on environmental protection at various levels. The team was also received by Mr. Yasser Arafat in Ramallah. In addition, the team met with Israeli officials and representatives of non-governmental organizations. By sometimes splitting up into five different groups, the team was able to visit many sites, ranging from solid waste dumps and waste-water treatment plants, to rangeland rehabilitation projects, and many other sites where there has been damage to environmental infrastructure as a result of the conflict. The team stayed in Jerusalem (Al Quds) and in Gaza, and was also able to visit Bethlehem, the Emek Hefer area, Halhoul, Hebron (Al Khalil) and its environs, Jenin, Ramallah and Tel Aviv.

13. Despite the fact that the desk study focuses on the Occupied Palestinian Territories, UNEP has emphasized that it should engender a positive environmental outcome for the whole region. Therefore, in its chapter 11, the desk study makes clear recommendations on how to improve the environment in such a fashion that it will be beneficial not only to the Occupied Palestinian Territories, but to the region as a whole. The full study is presented in document UNEP/GC.22/INF/31 — Desk study on the Environment in the Occupied Palestinian Territories: Note by the Executive Director.

14. Prior to and during the visits to the region by UNEP officials, consultations were held with the key United Nations agencies in the region including the United Nations Development Programme (UNDP), the United Nations Relief and Works Agency (UNRWA), the Office of the United Nations Special Coordinator in the Occupied Territories (UNSCO), the United Nations Economic and Social Commission for Western Asia (ESCWA) and the Office of the United Nations High Commissioner for Human Rights (OHCHR). In addition, other UNEP specialists contributed to the analysis of satellite images and cartography work in the report.

15. The secretariat hereby submits, in annex, the recommendations of the UNEP desk study team to the Governing Council/Global Ministerial Environment Forum for its consideration and recommendation on the way forward. The full text of the desk study is contained in document UNEP/GC.22/INF/31.

Annex

**Recommendations proposed in the Desk Study**

Among other factors, the occupation, policies of closure and curfew and incursions of the Israeli military have had significant negative environmental impacts. Many of the findings in this UNEP Desk Study are alarming, and need to be addressed immediately.

In the current phase of the conflict, the absence of even minimal cooperation is worsening the situation on a daily basis, with impacts not only on the environment but also on human health.

For these reasons, the Israelis and Palestinians, as well as the international community, should do their utmost to put an end to the conflict. All efforts at seeking a peaceful solution should include parallel attempts to re-open channels to address environmental protection, which could be facilitated by an independent third party, when needed.

The alarming conflict-related environmental problems are adding to existing pressures on the environment, which include population pressures coupled with scarcity of land, weak environmental infrastructure, inadequate resources for environmental management, and global environmental trends such as desertification and climate change.

**Transboundary and international cooperation**

As a result of the occupation and the escalation of the Israel-Palestinian conflict since September 2000 (second intifada), only minimal cooperation between the Israeli and Palestinian authorities is taking place. However, a document signed by the water authorities of both parties aims to keep water and wastewater issues out of the conflict, but even this has proved to be difficult. In particular, almost all projects relating to wastewater have been on hold since autumn 2000, although the Israelis have reported positive news on the meeting of the Joint Water Committee in December 2002. Given the alarming findings of the Desk Study, cooperation between the parties on acute environmental issues should be immediately revitalized. There is need for an institutional framework to negotiate these issues, especially during times of conflict. The specific recommendations are listed below.

**1. Keep the environment out of the conflict.**

At the beginning of the second intifada, an agreement between Israeli and Palestinian water authorities was made to keep water and wastewater issues out of the conflict. This agreement should be supported and respected by all parties, and should be extended to all environmental issues, including solid waste management, hazardous wastes and protection of biodiversity. The international community should give its full support to keeping the environment out of the conflict. Israel's role as a valuable partner in any regional and international cooperation should be recognized.

**2. Reactivate the Joint Environmental Experts Committee established by the Oslo agreements.**

This committee should work as an Israeli-Palestinian expert committee for acute environmental problems. Both Israeli and Palestinian environmental administrations should have their representatives on the committee. It should identify environmental hot spots that affect both sides, and recommend and plan realistic remedial actions with a clear schedule. In the beginning, an independent third party could facilitate these meetings, if needed.

**3. Build on regional solutions.**

From the economical and logistical perspectives, many environmental solutions relating to the freshwater supply, wastewater, solid waste and hazardous waste management should be built on the regional, cross-border cooperation. For example, the water company that serves both Israel and the Occupied Palestinian Territories continues to function despite the conflict. This kind of technical

cooperation should be encouraged to minimize costs and find efficient solutions for environmental management.

**4. Revitalize the cross-border cooperation between environmental authorities, experts, scientists and NGOs.**

Regular and open exchange of information would enable environmental experts, scientists, authorities and NGOs to seek timely and cost-effective solutions to environmental problems and to make reasonable plans for regional environmental management. A better exchange of information is acutely needed.

**5. Facilitate the Palestinian Authority's participation in international environmental cooperation.**

In the ongoing Palestinian institution-building process, it is very important that the Palestinian Authority can fully benefit as soon as possible from international environmental cooperation in the Middle East region, in the Mediterranean and in a global context. Secretariats of multilateral environmental agreements (MEAs) should facilitate, as appropriate, the participation of the Palestinian Authority in relevant meetings and processes.

**6. Make environment a priority.**

In the Occupied Palestinian Territories and in the whole region, many environmental threats meet. These include water scarcity, pollution of aquifers, rapid population growth, burden on the environment from refugees, overgrazing, loss of forests and vegetation cover, land degradation, desertification and the effects of global climate change. Environmental issues and projects have to be among the highest priorities for the Palestinian Authority, but also for the international community and donors.

**7. Coordinate environmental laws and regulations regionally.**

To avoid a situation where industries move to the other side of the border to avoid more stringent environmental standards, environmental laws and regulations should be coordinated, and also regionally harmonized. Therefore environmental laws and standards in the region should be harmonized to avoid the risk of conflicting practices and to maximize regional and cross-border effects of environment protection. Internationally accepted standards as agreed under the Oslo II Accord should be used. Both Israel and the Palestinian Authority should take part in this regional coordination.

**8. The international community and donors should support sustainable development and environmental cooperation.**

When the international community and donors are financing and supporting projects in the Occupied Palestinian Territories, all projects should meet demanding environmental criteria. Important elements of the projects should be the analysis of cross-border environmental impacts and promotion of cross-border environmental cooperation. Israel should take all steps to facilitate the passage without restriction and delay of imported materials for construction, repair and maintenance related to the implementation of these projects. There have been delays in the approval of locations for construction of donor-funded environmental infrastructure. Efforts should be made by Israelis and Palestinians to speed up the process of approval, for example by making the negotiation process more efficient when there is a need to modify plans.

**9. Active role for the Global Environment Facility (GEF).**

The Global Environment Facility (GEF) should seek ways to continue supporting the Palestinian Authority in its efforts to improve its preparedness to implement international environmental agreements.

**10. Develop environmental cooperation as a confidence-building tool.**

During the conflict, a minimum level of environmental cooperation is essential to safeguard natural resources and to prevent health risks and long-term degradation of the environment. Environmental cooperation should also be used as a confidence-building tool between Israelis and Palestinians, to facilitate other steps in the peace process.

**National Environment Action Plan (NEAP)**

The Palestinian Authority needs a scientific and clearly prioritized plan to work with the most acute environmental problems. This work plan can be developed from the existing National Environment Action Plan (NEAP).

**11. Review and update the National Environment Action Plan (NEAP).**

The NEAP should be based on key international concepts such as the polluter pays principle and precaution. The updated National Environment Action Plan should identify priority actions to be implemented as soon as conditions permit.

**12. Include all stakeholders in the revised NEAP.**

All relevant sectors in environmental planning should be involved when updating the National Environment Action Plan (e.g. water, agriculture, urban planning).

**13. Develop sectoral environment policies based on the NEAP.**

Sectoral environment policies and laws should be developed on the basis of the updated National Environment Action Plan. The sectoral policies and standards could be harmonized with advanced international standards. Establish bylaws and guidelines for environmental themes under the framework environmental law.

**14. Develop capacity-building for the NEAP.**

The international community should assist the Palestinian Authority with capacity-building for National Environment Action Plan implementation, drawing on relevant experience in other countries. Promote research as a decision support system and integrate the results of the research into the development of the environmental sector.

**15. Promote environmental education.**

Environmental education should be promoted, targeting students at the primary and secondary school levels through curricula, and also by including appropriate modules in university courses. The general public should be sensitized using various media and other channels. It is essential that all Palestinians are fully aware of the value of the environment and the need to protect it, as well as the risks of damage.

**Environmental Quality Authority (EQA)**

The Palestinian Environmental Quality Authority (EQA) has the main responsibility for environmental administration in the Occupied Palestinian Territories. It still lacks a clear mandate, and financial and human resources to fulfil its tasks. An additional problem for EQA, as for all other bodies of the Palestinian administration, is that the work is conducted in two geographically separate entities, the West Bank and Gaza.

**16. Strengthen the mandate of EQA.**

The mandate and functions of the Environmental Quality Authority should be strengthened and its coordination role on environmental issues clarified.

- 17. Build capacity for intersectoral cooperation.**  
Specific training programmes should be provided on intersectoral coordination and cooperation on environmental matters for Environmental Quality Authority officials and officials of other key bodies.
- 18. Improve the controlling capacity of EQA.**  
EQA should have proper equipment and resources to observe and measure the quality of the environment. For this a properly equipped environmental laboratory with trained personnel for sampling and laboratory work is needed.
- 19. Use environmental impact assessments (EIA).**  
Environmental impact assessment (EIA) procedures should be strengthened by building in an effective review and dispute settlement procedure. EIA training and awareness-raising are also needed.
- 20. Strengthen the enforcement of environmental laws.**  
The enforcement of environmental laws and standards should be strengthened, including through the further application of penalties. The role of the courts, the police and private law professionals in enforcement should be clarified. The role of economic incentives as an enforcement mechanism should be increased. Major awareness-raising and capacity-building efforts should be carried out, directed at Palestinian Authority officials and stakeholders, concerning all aspects of the Environmental Law, to support its effective implementation and enforcement.

### **Land-use planning**

Land-use planning is one of the most difficult issues in the Occupied Palestinian Territories. The Oslo agreements divide the territory into areas A, B and C, where Israeli and Palestinian authorities have different mandates and responsibilities. Once the Palestinian Authority received full powers and responsibilities over land-use planning in areas A and B, according to the Oslo Accords, Israel has not been involved in land-use planning processes in those areas. In the current conflict situation, the Israeli military has re-occupied various parts of the areas A and B at different times, and therefore the Palestinian Authority has had difficulty in carrying out its responsibilities on land-use planning.

It is also evident that many environmental improvements – building of new wastewater treatment plants, upgrading the quality of landfills or relocating them, etc. – are pending, and may not be resolved before there is an end to the conflict.

As a consequence of the occupation, the security demands make land-use planning a very complex process and an additional burden on the environment by having existing settlements and the land areas divided into different sectors. This leads to a situation where double-infrastructure often exists in an area where land is already scarce (e.g. security roads to settlements).

- 21. Improve cross-border cooperation in land-use planning.**  
Land-use planning can be developed as a cooperation tool between the parties. Proper land-use planning could help the parties to make effective plans for environmental infrastructure and to avoid unnecessary double structures.
- 22. Take environmental considerations into account in land-use planning.**  
In the Occupied Palestinian Territories, land-use planning should take into account environmental considerations. For example, plans on where to locate new wastewater treatment plants and solid waste landfills should take into account the proximity of human settlements, and new housing should not be located too close to existing wastewater treatment plants and solid waste dump sites.

### **Non-governmental organizations (NGOs)**

One of the negative aspects of the current conflict is that very few non-governmental organizations in the Occupied Palestinian Territories and in Israel have cross-border cooperation. The role of the civil society and NGOs is vital and therefore cooperation between NGOs should be encouraged. Also, inside the Occupied Palestinian Territories, the NGOs should be given more room to influence policy-making.

**23. Encourage NGO cooperation between Palestinians and Israelis.**

All stakeholders should support cooperation between NGOs in the Occupied Palestinian Territories and Israel. The international community and donors should help the Palestinian NGO society play an important role regionally and internationally.

**24. Support the role of NGOs inside the Occupied Palestinian Territory.**

Discussing environmental issues, the presenting different opinions and challenging the authorities are normal functions that NGOs carry out in democratic societies. The Palestinian National Environmental Action Plan also recognizes the important role of the NGOs. A strengthening of the capacities and the role of NGOs, and preserving of their independence, should be encouraged. An important aspect related to NGO activities is access to all information, and this should include full transparency on donor-funded environmental projects.

### **Private sector**

The private sector has become a crucial player in environmental policies, due to commitments and environmental standards adopted voluntarily by the business community. The private sector should be made an ally in the much-needed environmental changes in the Occupied Palestinian Territories.

**25. Open an environmental dialogue with the private sector.**

The private sector should be fully engaged in environmental policy-making in the Occupied Palestinian Territories. This would enable it to continue working proactively on environmental management and to further facilitate the work of the Environmental Quality Authority.

**26. Introduce voluntary environmental standards in the private sector.**

Environmental quality standards, such as ISO 14001, should be introduced in the private sector.

### **Freshwater management**

Due to the water scarcity in the region, freshwater is the most crucial aspect of environmental management in the Occupied Palestinian Territories. Water is also one of the important issues addressed in the Oslo Accords. Even since the escalation of the conflict, attempts have been made to follow the lines of the Oslo Accords with regard to the establishment of new wells and management of quantities pumped.

According to the information available to UNEP, both the quantity of water that may be extracted on a sustainable basis and the quality of the groundwater should be addressed. The overall quantity of water that may be pumped on a sustainable basis has to be critically reviewed based on the newest data available. The quality of water is rapidly deteriorating, and proper protection measures have to be implemented as soon as possible.

Finally, desalination of sea water seems to be a long-term solution to increase the amount of water for households and industry. However, the resulting higher costs of water may present social challenges in the Occupied Palestinian Territories.

**27. Strengthen the capacity of the Palestinian Water Authority (PWA).**

The capacities of PWA staff should be strengthened, in particular in the fields of aquifer modelling and analyses.



- 28. Activate the National Water Council.**  
In the Occupied Palestinian Territories, the National Water Council, comprising representatives with membership of different ministries and stakeholders, should meet on a periodic basis to manage all freshwater and wastewater issues in a comprehensive way.
- 29. Approve and implement a National Water Plan.**  
A National Water Plan should be a tool for the Palestinian Authority to improve the management of water resources and plan water issues.
- 30. Carry out regular updates of the National Water Plan.**  
The National Water Plan should be updated regularly.
- 31. Continue the technical Palestinian-Israeli water cooperation.**  
Technical cooperation on the water sector should continue. The cooperation is needed to determine sustainable water use plans and to solve the urgent problems of water infrastructure. The cooperation should also focus on wastewater issues.
- 32. Create transparency with regard to shared aquifers.**  
It is important to create transparency in the management of aquifers shared by Israelis and Palestinians by improving the exchange of hydrological monitoring data. The exchange of information should cover methodologies applied for the analyses of the shared aquifers and the results of such analyses.
- 33. Review the water extraction practice and plans.**  
The water extraction practice and plans need to be carefully reviewed against existing knowledge about the water resources. Water extraction rates must be based on sustainable principles that do not overexploit the resources.
- 34. Improve water monitoring.**  
The regular water monitoring should focus both on quantity and quality. Regular metering of pumping amounts and water levels would enable the respective authorities to regulate the use of water. Much more systematic monitoring is needed to maintain necessary data on water quality. There is also a need for improved monitoring of wells in Gaza (metering of pumping amounts, quality and water levels).
- 35. Develop local springs (West Bank).**  
There is a need for continued support for the development of local springs, especially in the West Bank, paying due attention to the protection of ecosystems.
- 36. Identify the pollution risks for freshwater.**  
The protection of freshwater should be improved by identifying pollution hot spots, devising short-term remedies at the hot spots, enforcing bans on obsolete pesticide use, improving integrated pest management, ensuring that polluting activities do not affect streams, water channels, springs and wells, and preventing pollution from fuel storage, including at petrol stations.
- 37. Tell people how to protect freshwater sources.**  
Awareness campaigns should be organized on the impacts of improper disposal of domestic and hazardous waste, and on day-to-day hygiene measures in relation to household water storage and use.
- 38. Save water.**  
Efforts should be made to save water, including by optimizing its use. There is a need to develop and implement demand-side management aimed at limiting and optimizing water use. The demand-side water management should address industrial, agricultural and household use of water and should include such tools as registration and licensing of wells, permitting the use of water, pricing and awareness-raising.

**39. Replace freshwater in irrigation.**

Increasing the use of treated wastewater in irrigation will save scarce freshwater resources.

**40. Promote regional exchange on agricultural technologies.**

The exchange of information and experience between Israelis and Palestinians should be promoted on crop varieties, irrigation techniques and efficient use of water in agriculture.

**41. Stop the leakages.**

There should be immediate action to repair and rehabilitate leaking and damaged water supply systems. Water is currently misused, and leaking networks can also cause dangerous cross-contamination with wastewaters and wastes, leading to negative hygienic and health effects.

**42. Implement desalination projects (Gaza).**

It is obvious that, even with water-saving measures, new sources of freshwater will be needed in the future. Therefore desalination projects to obtain freshwater from the sea should be promoted, drawing on renewable sources of energy where possible. Existing plans should be completed. Funding of projects should include long-term maintenance and operational costs.

**43. Continue water modelling of the Coastal Aquifer (Gaza).**

Continued work, including local capacity-building, is needed on the modelling of the Gaza aquifer as an instrument for improved management decisions.

**44. Increase knowledge of the mountain aquifers (West Bank).**

The sound management of water resources calls for improved knowledge and management of the mountain aquifers. Modelling should include recharge calculations from rainfall, soil characteristics, and the potential effects of transport of pollutants. It is essential to resolve any uncertainties concerning the amount of water that may be extracted on a sustainable basis from the mountain aquifers, in particular the Eastern Aquifer. Reliable measurements should be carried out of the actual outflows from the Eastern Aquifer via the Dead Sea shore springs.

**45. Revive hydrological monitoring.**

The hydrological monitoring that has effectively stopped since September 2000 should be resumed.

**Wastewater management**

There are only a few wastewater treatment facilities in the Occupied Palestinian Territories, and due to the conflict and/or inadequate management most of them are not functioning properly. This is an alarming issue since the untreated wastewater is polluting the aquifers and the seashore in Gaza. As the freshwater and sewage networks are in poor condition, there is also cross-contamination from wastewater to freshwater, causing negative health effects.

In addition to the wastewater from the Palestinian towns and villages, the Israeli settlements in the West Bank and Gaza are adding to the problem of untreated wastewater.

**46. Prioritize wastewater issues.**

Wastewater issues should be given high priority in the development of the region. Current trends and threats from untreated wastewaters undermine the livelihood development and jeopardize the quality of the water.

**47. Include wastewater issues in Israeli-Palestinian water cooperation.**

Wastewater issues should be included in existing technical cooperation between the parties. Without prejudice to the outcome of the Final Status Negotiations on settlements, in the interim, each party should have responsibility for the management and disposal of the wastewater it generates. However, where appropriate, joint solutions could be considered.

- 48. Strengthen wastewater management.**  
The institutional framework on wastewater management should be strengthened. The role of the Environmental Quality Authority (EQA) in controlling the wastewater outlets should be clarified. Similarly, the municipal authorities should be given clear tasks to implement sound wastewater practices.
- 49. Improve wastewater legislation.**  
Legislation on the handling of wastewater needs to be strengthened, in order to implement the goals and policies presented in the National Water Plan. Accompanying measures should include the introduction of relevant standards, permits and fees for purification, and should reflected advanced international standards.
- 50. Improve law enforcement.**  
Enforcement tools are needed to enable the authorities to control and implement policies. The roles of enforcement bodies should be identified with regard to policing and court procedure in enforcement and control.
- 51. Implement the polluter pays principle.**  
Policies and systems should be instituted to recover the investment and operation.
- 52. Repair the cesspits.**  
Existing cesspits should be repaired or rehabilitated to minimize the uncontrolled flow of wastewater, including with concrete lining to protect groundwater.
- 53. Use cesspits only as a temporary solution.**  
The use of cesspits can be used only as a temporary solution in areas where the wastewater infrastructure will not allow for more comprehensive improvements. However, the cesspits should be emptied in carefully selected areas, or optimally, in wastewater treatment facilities, and should have concrete lining.
- 54. Improve wastewater management in the refugee camps.**  
Improved wastewater management is needed in the refugee camps in the West Bank.
- 55. Include the wastewater treatment plants in land-use planning.**  
The construction of wastewater networks and wastewater treatment plants must be given the highest priority. Possibilities of establishing joint wastewater treatment plants and infrastructure should be explored. Only in the event that this is not feasible should separate structures be planned and constructed. Land-use planning should support the mid-term planning and site selection for the treatment facilities.
- 56. Expand the wastewater system to the whole population.**  
In the long term, the wastewater system should be expanded to cater for the whole population, with adequate treatment and effective reuse of collected wastewater. Wastewater treatment plants should be established in according to advanced international standards. Donor countries should be encouraged to allocate funds for long-term operation and maintenance.
- 57. Establish wastewater treatment plants.**  
Establishment of wastewater treatment plants has to be the long-term policy in all areas of the Occupied Palestinian Territories.
- 58. Treat industrial wastewater.**  
Industries must be required to implement restrictions and controls, including pre-treatment of wastewater before it is discharged to municipal collection systems, to reduce the level of pollutants entering the environment.

**59. Separate the hazardous substances and waste from wastewater.**

On an urgent basis, studies must be conducted on industrial sites that are potentially generating highly hazardous wastewater effluent. Immediate action should be taken to minimize environmental and health risks.

**60. Monitor and control direct pollution to the Mediterranean.**

The 18 effluent pipes discharging wastewater of varying quality and quantity into coastal waters and onto Gaza beaches must be closed. A plan to reduce the number of effluent pipes, as well as to upgrade the effluent to acceptable standards for reuse or discharge to natural watercourses must be initiated. The current discharge into the sea has negative impacts on human health and also threatens seaside recreational and tourism development in Gaza.

**61. Settlements should treat all their own wastewater.**

Israeli should do the utmost to minimize the environmental impacts of the settlements. Israel must ensure that all settlements are equipped with wastewater treatment plants and that domestic and industrial effluents meet applicable standards.

**62. Increase reuse of treated wastewater.**

The reuse of treated wastewater should be promoted on a widespread basis. Reuse of wastewater should be borne in mind when any new wastewater treatment plants are planned and constructed.

**63. Establish standards for reuse.**

Standards should be established and implemented for the various reuses of treated wastewater, such as irrigated agriculture and aquifer recharge.

**64. Treat immediately the Beit Lahia (Gaza) wastewater lake.**

The Beit Lahia wastewater treatment plant and its sewage lake is one of the major environmental “hot spots” where urgent remedial action is required. The problem is also a political one where the parties have shown little willingness to make compromises in the interests of environmental protection and to minimize potential risks to human health. A mobile wastewater treatment plant should be installed as soon as possible to treat the effluent from the existing overloaded treatment plant ensuring that it meets standards for irrigation reuse, aquifer recharge, and/or disposal at sea. The issue of the sewage lake and measures to eliminate it should also be urgently addressed by the JWC.

**65. Establish standards for treated wastewater effluent and sludge**

The wastewater effluent discharged to wadis, streams and the Mediterranean Sea in Gaza must be of advanced international standards.

**Solid waste**

There were several critical findings with regard to solid waste management in the Occupied Palestinian Territories. On the one hand, the solid waste management sector has suffered from the Israeli occupation in many ways. For example, curfews and roadblocks have hindered transport to the municipal disposal sites, resulting in the establishment of temporary disposal sites.

On the other hand, most of the permanent disposal sites are not sanitary landfills, and groundwater is threatened by pollution from the landfills. Existing landfill management is not optimal. At all the landfills UNEP visited, the environmentally dangerous practice the open burning of waste was taking place. For example, if any PVC is contained in the solid waste, hazardous dioxins will be released. There is no separation of hazardous and non-hazardous waste, except for medical waste in selected circumstances.

The proposed mitigation measures are divided into short-term (3 years), medium-term (10 years) and long-term (20 years) actions.

One critical assumption for implementation of all action and follow-up is an easing of restrictions on motorized transport within the region (curfews, roadblocks). The easing of import restrictions concerning spare parts and necessary new and replacement equipment is also required. Without these measures, any upgrading and improvement of the situation will be very difficult.

#### Short-term recommendations

**66. Strengthen the role of EQA in the waste sector.**

Activities of the Environmental Quality Authority in municipal solid waste and hazardous waste coordination, planning, licensing and monitoring must be revitalized as soon as possible, within the context of a comprehensive overhaul of environmental laws, regulations and standards.

**67. Improve donor coordination in the waste sector.**

There is a need for strengthening donor coordination related to municipal solid waste and hazardous waste management in the Occupied Palestinian Territories. Projects should focus also on treatment, and should take into account the costs of operation and maintenance.

**68. Re-establish Israeli-Palestinian waste cooperation.**

Cooperation and coordination in waste management must be revitalised between the Israeli and Palestinian environmental authorities. One means of achieving this would be to revitalize the former Joint Environmental Experts Committee (JEEC) and to develop a set of updated objectives and tasks. Initial key topics would be acceptable disposal sites and practices throughout the Occupied Palestinian Territories, recycling schemes, transfer of regional experience, and hazardous waste disposal and treatment.

**69. Separate hazardous and non-hazardous waste.**

Separate collection and disposal schemes for key hazardous waste types should be established, based on initial, simple disposal or storage (see additional recommendations below).

**70. Establish regional solid waste councils.**

The existing, fragmented institutional structure does not support professional and rational municipal solid waste services. The ongoing efforts to establish regional solid waste councils must continue, particularly for the regions with many small villages and extensive rural areas. Assuming that progress is made on resolving the conflict, it could be a short-term goal to have all substantive parts of solid waste services in the Occupied Palestinian Territories organised through a combination of large municipalities or regional councils. Donor-supported schemes for institutional strengthening and training must be an initial activity within this component.

**71. Introduce solid waste fees.**

When the collection and disposal system is functioning more adequately, municipal solid waste fees should be introduced for all citizens (starting at an agreed minimum level). Disposal fees payable must be introduced at all remaining disposal sites to facilitate improved operation.

**72. Improve collection of wastes.**

Improved collection schemes should be established or re-established immediately. The recent damage assessment by the Donor Support Group provides an initial overview of replacement needs resulting from direct damage or extraordinary wear and tear. However, upgrading of the collection system must be based on a professional overview assessment, once closures, curfews and other restrictions are lifted. It is not rational merely to replace systems that could be significantly improved. Thus, a complete survey should be carried out as soon as possible. This must include the specifications, age and condition of equipment and information on performance, maintenance schemes, workshop facilities, etc. Based on this, it will be possible to establish an overall priority list for upgrading of the collection system throughout the Occupied Palestinian Territories. Once closures and curfews are lifted, the pre-September 2000 levels would be a starting point.

**73. Keep the Occupied Palestinian Territories clean.**

In a non-conflict situation, initial clean-up campaigns should be launched throughout the Occupied Palestinian Territories, possibly using the substantial unemployed workforce. In parallel, an overall, environmental awareness and education campaign should be launched via schools and the media.

**74. Stop the open burning of waste.**

An initial recommendation for the disposal system is to stop immediately the open burning of municipal solid waste in the Occupied Palestinian Territories, both at temporary and permanent sites as well as at open lots in the collection areas. This is probably the most important health and environmental hazard from solid waste management. Furthermore, operational equipment should be made available at all remaining sites. If the operational experience from the use of a specialized solid waste compactor in Nablus is positive, such compactors should be introduced elsewhere, at least at the other large sites. These compactors can achieve a density in the landfill that may be 25-50 % higher than with conventional vehicles, and this may be crucial given the availability and costs of land within the Occupied Palestinian Territories.

**75. Remove the debris from damage due to the conflict.**

The most visible and problematic debris should be removed as soon as possible. Specialized cutting and sorting equipment (designed for environmental demolition) should be procured and distributed to the most relevant regions. Local contractors may utilize this equipment, preferably after practical training. This will transform mixed debris from a problem to a resource, reducing the need for natural stone and gravel from quarries.

**76. Recycle metal, glass and other materials.**

Collection and recycling of car wrecks should also begin as soon as possible, assuming that domestic processing capacity in Nablus can be used. The same applies to recycling of glass, based on the facilities in Hebron (Al Khalil). Smaller pilot schemes for other waste components may be introduced if found to be viable.

**77. Introduce composting.**

The existing pilot schemes for composting in Gaza should be re-established, supported by one or several pilot projects in the West Bank. As soon as positive results are achieved, the planning and gradual introduction of more widespread low-cost composting schemes should begin.

**78. Close and cover all temporary and emergency disposal.**

If located in environmentally sensitive areas, the accumulated solid waste should be removed or the site capped with a liner. However, it must be noted that removal of large disposal sites may also cause extra environmental impacts and substantial additional costs.

**79. Specific recommendations for solid waste management in Gaza.**

- Access to the three existing disposal sites must be opened as soon as possible, enabling the use of the normal collection fleet.
- The containers throughout Gaza should be replaced if the systems are functioning once more.
- Available municipal workshops should be upgraded and spare parts provided. In view of the short distances involved, necessary maintenance in Gaza could be carried out in three or four municipal/council workshops.
- A relevant revised institutional arrangement might include three regional councils and the Gaza city municipality.
- The waste from northern Gaza should be brought to the Gaza city site.
- The measures and operations at the disposal sites must be reviewed and improved, and training provided if necessary, for instance the use of daily soil coverage of disposal sites.
- Further site development must maintain an agreed minimum distance to the Israeli border. New sites should be coordinated to minimize environmental impact.
- Available equipment must be utilized to the maximum according to modern practices.

- If not already in place, operational plans must be prepared and introduced.
- Bulldozers should be supplemented by compactors, with a minimum of one compactor for each site.
- Leachate control should be improved

**80. Specific recommendations for solid waste management in the West Bank.**

- An immediate assessment should be conducted to map the sites that pose a great threat to human health and to the environment.
- The current waste disposal site in Ramallah/Al Bireh should be closed. Closure restrictions should be eased to allow use of the previous disposal site. However, the site and the access road would need to be slightly relocated to a more isolated adjacent location. Operational practices should be improved, for instance, the use of daily cover.
- The access should be re-established to the disposal site used prior to September 2000 in Jenin. The operational practices at this site should be improved.
- An immediate assessment should be conducted to identify which of the previous disposal sites can be used if/when curfew and closure restrictions are lifted, in a transitional phase until a planned network of new disposal sites is established.
- A future disposal site plan should be developed for the West Bank as soon as practically possible to identify an optimized network of sites, coordinated to minimize environmental impact. Previous proposals for three to five sites for the West Bank should be taken into consideration, and attention paid to vital aquifer recharge areas.
- Construction work should begin at the Jenin site as soon as access for the contractors has been provided. This site may cover Jenin, Tulkarm and Tublas districts.
- The site in the Jordan valley could be used for the Nablus district or a new site identified, possibly a regional site for Nablus, Qalqiliya and part of Salfit districts.
- A single site should be used for Ramallah, Jericho (Ariha) and part of Salfit districts. With an appropriately adjusted location, the Al Bireh site may be at least an interim solution for this region.
- If continued to be used as up to now, the Abu Dis site should be upgraded.
- A new site should be developed for the Bethlehem (Beit Lahm) district.
- A new site should be developed for Hebron (Al Khalil) district (or one common site for Bethlehem (Beit Lahm) and Hebron (Al Khalil)).
- Other sites could be developed if found to be feasible (e.g. north-western West Bank, Jericho (Ariha)).
- Israel should ensure that settlements are equipped with appropriate treatment and disposal facilities, which meet internationally accepted standards for municipal and industrial solid waste.

Medium-term recommendations

**81. Introduce privatization gradually.**

Privatization should be introduced gradually, starting with tendering for collection and some of the disposal operations.

**82. Make improvements throughout the Occupied Palestinian Territories.**

Within the medium term, all the local institutional improvements started in the short term should be finalized throughout the Occupied Palestinian Territories. All rationalized municipal solid waste entities (large municipalities and regional councils) should be established and be in operation.

**83. Upgrade the collection system to cover most of the population.**

The collection system should be completely upgraded according to the overall recommendations, to cover nearly 100 % of the Gaza population and approximately 80-90 % of the population of the West Bank.

**84. Remove debris.**

All remaining debris in urban areas from the conflict should be removed and utilized/recycled within the medium term. All visible car wrecks should be removed, covered, and/or recycled as feasible and appropriate.

**85. Introduce gas utilization and treatment of leachate at landfills.**

The disposal sites should be further developed, for instance adding landfill gas utilization when applicable and increasing the treatment level of leachate.

**86. Provide incentives for recycling.**

Recycling should be developed through incentives and voluntary schemes, with a view to increasing recycling to 10 %. Processing should be based on domestic processing, cooperation with the Israeli recycling industry and export where economically feasible.

**87. Introduce full-scale composting plants.**

Assuming that experience from the initial composting schemes is positive, full-scale composting plants based on low-cost and low-tech solutions should gradually be implemented in the medium (and long) term, starting with the most suitable areas where land is scarce and/or soil is particularly needed. These plants should be at an appropriate distance from populations.

**88. Separate collection system for hazardous waste.**

Separate collection and disposal schemes for most hazardous waste types and quantities should be established, based on local disposal, export etc.

**89. Introduce collection and disposal fees.**

The fee collection system should be developed, and all municipal solid waste entities should be organized along the same lines, for instance through adding waste fees to water or electricity bills. The portion of costs being recovered from the households should be increased to a higher, agreed level (for instance 50 %). The disposal fees at the sites should cover 100 % of the actual disposal costs of the received waste.

**90. Reduce the number of disposal sites in Gaza.**

In Gaza, the central and southern disposal sites are fairly close to each other. The possibility of having only one or two sites in Gaza should be assessed on the assumption that restrictions are more or less removed. Due to scarcity of land, composting should be particularly encouraged.

**91. Limit the number of disposal sites in the West Bank.**

A revised disposal site system for the West Bank should be identified, established and put into operation, resulting in five to seven operational sites. A transfer and haulage system should be implemented based on non-compacting systems.

**92. Envisage cross-border cooperation in waste collection and treatment.**

Cross-border cooperation between the Palestinian and Israeli towns and villages could be introduced. This could make waste collection and the use of disposal sites more effective.

Long-term recommendations

**93. Use state of the art technology in all solid waste treatment**

All treatment systems should be further developed, and new treatment options assessed when conditions are found feasible. All facilities should be at an appropriate distance from populations. Advanced international standards should be followed and funding for long-term operation and maintenance should be included in the cost of projects.



**94. Establish state-of-the-art sanitary landfills.**

In the longer term, all remaining landfills must be brought up to high international standards, and the number should be reduced to a few large sites. Ultimately, one central landfill, with at least two large transfer stations, could serve all of Gaza. The whole West Bank could be served by three major sites: north, central and south. If continued to be used as up to now, the Abu Dis site should be upgraded.

**95. Increase the level of recycling.**

Recycling will be an important part of the system, and mandatory schemes will be gradually introduced, having a recycling rate of 20-25 % as a starting point.

**96. Apply the Polluter pays principle.**

Fees should ultimately cover 100 % of the costs of solid waste management, avoiding any subsidies from the authorities and fully applying the polluter pays principle.

**Hazardous waste**

Currently, hazardous wastes are not separated from other wastes, nor stored or disposed of safely. At most of the solid waste disposal sites, there is a practice of open burning, which releases toxic substances, such as dioxins. Also liquid hazardous wastes enter the soil, thus polluting the groundwater. These existing practices may result in solid waste disposal sites being closed in the near future, with major clean-up operations of polluted soil then being needed. To minimize or avoid these very expensive risks, immediate action should be taken to separate the hazardous wastes and handle them properly.

Short-term recommendations**97. Classify and separate hazardous waste.**

As a first phase, it is essential to separate hazardous waste from other waste at source, according to physical and chemical characteristics relevant to their disposal and storage. This requires the establishment or adoption of a classification system for hazardous wastes. A classification system should be adopted. The approach outlined in the Pollutant Release and Transfer Register (PRTR) programme developed by the United Nations Institute for Training and Research could be used. Field surveys need to be conducted to establish a database on the quantity, quality and generators of hazardous wastes within the Occupied Palestinian Territories.

**98. Introduce regulations and other policy tools.**

Hazardous waste management regulations need to be finalized, including regulatory measures for the environmentally sound management of hazardous wastes that make the generator responsible for all hazardous waste up to final elimination. Regulations should encourage industry to treat, recycle and reuse waste at the source of generation. The prohibition on import, sale and use of internationally banned pesticides should be enforced.

**99. Minimize the amount of hazardous waste.**

Policies to minimize (or eliminate) hazardous waste should be pursued. Hazardous waste minimization and recycling objectives should be integrated into procedures for environmental impact assessment.

**100. Adopt a regional approach to the treatment of hazardous waste.**

In general, the regional treatment of hazardous waste generated in the Occupied Palestinian Territories should be promoted. The low volume of hazardous waste generated in the Occupied Palestinian Territories does not justify, economically or operationally, the construction of a separate treatment facility. Further the small size of the area in question, the scattered distribution of the population, the fragile ecosystem and the sensitivity of the watershed areas also argue against such a solution. These wastes must be handled on a regional basis. As agreed in the Oslo II Accord, the facility at Ramat Hovav in Israel should be used. It is currently equipped to handle all types of hazardous waste generated in the Occupied Palestinian Territories, with the exception of highly halogenated waste and

some types of special waste. Additional regional solutions could be explored in partnership with Egypt, including construction and operation of a joint incinerator.

**101. Develop local solutions for selected types of hazardous waste.**

In a few specific cases (e.g. old tyres and medical waste), there are solutions for certain types of environmentally sound hazardous waste treatment that could be established in the Occupied Palestinian Territories, and which do not require a regional solution (see recommendations 113 and 114 below). With regard to medical waste, the incinerators in the West Bank should be improved.

**102. Establish a cleaner production centre.**

A cleaner production centre should be set up to provide training and capacity-building for Palestinians along the lines of those already set up by UNEP and UNIDO.

**103. Introduce economic incentives.**

Appropriate incentive measures should be developed, including those drawing on the polluter pays principle. Economic incentives should be introduced to encourage the use of recycled material, providing that these materials are environmentally sound.

**104. Use the Basel Convention notification process.**

In spite of the fact that the Occupied Palestinian Territories are not a party to the Basel Convention, the relevant notification procedures should be adopted, and regional agreements promoted to regulate the transboundary movement of hazardous wastes. The disposal of hazardous wastes should be tracked, from shipment procedure, certificates of acceptance and receipt, to the issuing of permits for hazardous waste transportation and disposal.

**105. Increase knowledge.**

Knowledge and information on the economics of prevention and management of hazardous wastes should be promoted, together with information on waste generators, on environmentally sound technologies for waste reduction, and recycling.

**106. Launch public awareness campaigns.**

Public awareness and information programmes should be developed on hazardous waste generation, classification, and management. Information should be publicly available on the quantities, nature, handling procedures, disposal, treatment and any other activities related to the environmentally sound management of such waste.

**107. Develop and implement a collection plan.**

A plan should be developed for collection of hazardous wastes, safe temporary storage and proper treatment.

**108. Take precautions with regard to asbestos.**

Many buildings in the Occupied Palestinian Territories are covered with asbestos cement sheeting. The demolition of such buildings can result in the spread of asbestos dust in the air. In areas where people are living in close proximity to such demolished buildings, for example in Jenin where military operations have resulted in such damage, there could be harmful health effects to persons living nearby. Based on precaution, UNEP recommends analysing soil and air samples at these sites. The demolition or removal of asbestos sheeting should be undertaken in accordance with accepted precautionary measures.

**109. Sample and clean up illegally dumped hazardous waste.**

Several open sites contain barrels of hazardous waste that are currently not stored in secure conditions. Short-term priorities include sampling these barrels, analysing their contents, arranging transport to a secure storage site, and starting the transfer procedure of the waste to an appropriate disposal site.

**110. Establish a collection system for used oil.**

A collection system for used oil should be set up immediately, and a treatment facility constructed. Necessary equipment could be financed by the revenue from eco-taxes paid by the car owners when they change oil. The proposed treatment will yield a cheap secondary fuel that could be used in energy-intensive technologies needed in other hot spots.

**111. Ensure that settlements manage their hazardous waste.**

Israel should inventory the exact quantities and types of solid and liquid hazardous waste that are generated in the settlements, and take appropriate steps to ensure their safe collection, treatment and disposal, in accordance with Israel's own legislation.

**112. Measure the activity of radioactive materials.**

Funds should be made available for the Environmental Quality Authority to obtain portable equipment for radioactivity measurement to allow detection.

All radioactive waste should be collected and stored safely. In general it is important that the capacity should exist to handle radioactive substances. If currently not available, assistance should be provided to the Palestinian Authority to procure safe storage facilities. Claims have been made concerning radioactive material used for military purposes. As a general rule, UNEP recommends that all such claims should be investigated seriously and measurements carried out, provided adequate information is available on locations where such material has been used. Relevant United Nations agencies should be consulted on the issue of radioactivity.

Medium- and long-term recommendations

**113. Set up a pilot project for medical waste management.**

As noted in recommendation 101, in a few specific cases, there are solutions for certain types of environmentally sound hazardous waste treatment that could be established in the Occupied Palestinian Territories, and which do not require a regional solution. For instance, a pilot project should be set up comprising:

- Full inventory of medical waste generated in medical centres, clinics and laboratories;
- Testing of the separation and packing process in two or three representative medical centres;
- Interim storage at a temperature below 7° C;
- Transport of waste using specially designated refrigerated vehicles;
- A small-scale unit for the sterilization and solidification of medical waste (recent technologies include thermolysis, microwave treatment and steam sterilization – the best should be chosen for local conditions). Once damage from the conflict has been repaired, the installation next to the Gaza landfill could be used for this;
- Landfilling of treated waste in a pilot area, for example the Gaza landfill.

**114. Set up a pilot project for the recycling of tyres.**

A pilot project should be set up for the recycling of tyres, including the establishment of collection infrastructure (transportation and storage), a small -scale unit for the crushing of tyres, and a test site facility for recycling crushed tyres as raw material for road construction with bitumen. There is no available treatment facility in the West Bank or Gaza, but at least two technologies could be explored.

***(a) Recycling asphalt***

The tyres are crushed and the crushed granulated rubber particles obtained are mixed with asphalt. The process includes a feeder system, a reactor, a gas treatment system and storage tanks, and the tyre granulating equipment, which must be available locally to ensure supply. Asphalt is the binder for paving materials used in road construction. The performance of road surfaces depends not only on the quality of this binder, but also on the road's foundation and on the aggregates added to the paving mixture. A production unit of 50,000 metric tons per year requires about 5 million British Thermal Units/hour and 15 workers. Safety measures for workers are the same as those that apply in

traditional asphalt manufacturing plants. A plant in an urban area producing 75,000 metric tons per year would cost between US\$ 1.2 and US\$ 1.5 million

***(b) Thermal treatment of used tyres in cement kilns***

Tyres can be used as an auxiliary fuel in cement manufacturing. The high temperature in the cement kiln eliminates the possibility of air pollution from the processing of the tyres. In addition, the metallic elements in the tyres are incorporated as a necessary ingredient in the cement itself and no secondary waste is created.

**115. Organize a workshop on capacity-building.**

A workshop should be held to identify the potential for existing and new hazardous waste industries in the private sector in the Occupied Palestinian Territories, the incentives necessary to render their operation more attractive, and ways to improve hazardous waste treatment technologies.

**116. Pay attention to tanneries.**

Tannery effluent, currently released untreated into wastewater collection systems or directly into the environment, contains chromium and other hazardous substances requiring specially tailored treatment. The small size of tanneries in the Occupied Palestinian Territories presents a challenge for recouping investments in costly treatment facilities. As an interim measure, mobile treatment units could serve to concentrate the liquid effluent under pressure at low temperatures. The resulting sludge could be stabilized through solidification, and then buried in locations that are safe from the hydrological point of view. This technique could also be applied for the treatment of liquid effluent from olive oil production. Appropriate collection, transport and storage infrastructure, together with monitoring, would be required.

**117. Re-use oil.**

Used oil is currently re-refined into lubricating oil. The residues from the process are often released into the municipal solid and wastewater stream, with damaging impacts on the environment. Awareness must be raised on the problems caused by this casual disposal. Ideally, residues should be burnt in a cement kiln. When this is not possible, residues should be placed in a landfill in a sealed container. Used oil is currently also used as a fuel, which carries risks that heavy metals contained in the oil will be emitted into the environment. Thus, used oil is best used as a fuel in cement kilns where heavy metals are absorbed into the cement matrix. Implementing the re-use of oil in cooperation with existing Israeli facilities, such as the ones in Ariel and near Hebron, should be examined.

**118. Process used batteries.**

Used wet batteries are generated wherever car maintenance is done. These batteries contain acids and lead, both of which are hazardous. The small-scale recycling of wet batteries is typically highly polluting and should be avoided. An appropriate alternative is the draining of the acid, with subsequent neutralization, and melting of the metal casing in a non-ferrous foundry.

**119. Take care of sewage sludge and septage.**

Sludge volumes can be minimized through the separation of sewers and storm drainage systems. Sludge can be disposed of on land, but only when very frequent testing indicates low metal content, and when the standards for such testing are regularly checked. As these safety conditions are very stringent, in practice, this implies that direct disposal on land is not often an option. Other treatment methods include drying, liming, composting, or co-composting with yard waste or organics, followed by disposal on land, which is designed to return the organic matter in sludge to the land. As above, however, contaminants in sludge can make this practice inadvisable for farmland. If sludge is disposed of in landfills, it is important to carry out prior drying in order to avoid generating large volumes of leachate.

## Conservation and biodiversity

Biodiversity is under threat from a variety of pressures, which are further worsened by the ongoing conflict. During times of conflict, the political focus and resources are shifted away from sustainable management of natural resources and nature protection to other issues. The conflict presents difficulties for those on both sides who need to work together and to exchange information to achieve goals of nature protection.

### **120. Continue cooperation on management of protected areas and desertification.**

The lack or non-existence of cooperation is hampering the protection of valuable biodiversity as well as sustainable management of natural resources. Official cooperation on these issues has been halted since September 2000 and even technical cooperation has been very limited.

### **121. Strengthen the regional cooperation to combat desertification.**

Regional efforts to combat desertification would benefit from the participation of Israel in the UNCCD Sub-Regional Action Programme for West Asia. Jordan, Lebanon and the Syrian Arab Republic have recently endorsed the updated programme. The Palestinian Authority is also engaged in its development.

### **122. Enhance the protection of migratory species.**

Efforts should be made to engage the Palestinians and Israelis in relevant regional agreements such as the African-Eurasian Migratory Water Bird Agreement.

### **123. Strengthen the cooperation to protect the Dead Sea.**

Collaborative approaches between Israel, Jordan and the Palestinian Authority are needed to halt the degradation of the world's unique geomorphological feature. The international community should assist the parties to carefully assess the possibilities of including the Dead Sea in a World Heritage Site.

### **124. Increase nature protection.**

The pressures of population growth and economic development are endangering the environmental health of the region. Existing protected areas are in many cases too small to maintain their ecological integrity and long-term viability.

### **125. Ensure proper management of the existing protected areas.**

Authorities on both sides should respect the goals and management rules set for the areas protected. In particular, efforts to rehabilitate the Wadi Gaza should be intensified.

### **126. Restart capacity-building activities on conservation management.**

The system planning project for the protected areas has been suspended since 2000 and many of the much-needed *in situ* training activities have been stopped.

### **127. Prepare an educational book of Palestinian flora and fauna.**

With support from the international community, the Palestinian Authority and/or NGOs should prepare a comprehensive easy-to-read catalogue of the Palestinian flora and fauna, in Arabic and English. This tool should be used for capacity-building of the local authorities and as educational material in schools and universities.

### **128. Reconsider the ecological impacts of the separation wall.**

If the proposed separation wall is completed, this will further fragment the ecosystems and will disconnect natural ecological corridors. This is likely to have a negative impact on biodiversity. An environmental impact assessment could show additional negative impacts. Further, the proposed wall may have other negative impacts on local communities, for instance separating people from their wells and agricultural lands. From the environmental point of view, the construction of the separation wall should be reconsidered.

**129. Enforce the prohibition on hunting.**

While the conflict has hampered the enforcement of the ban in the West Bank and in some parts of Gaza, the illegal hunting of migratory birds along the Gaza coastline should be stopped at once.

**130. Stop deforestation.**

Rapid loss of planted and natural forests in the region is increasing the risks of soil degradation and loss of biodiversity. More than 25 % of the officially designated forest areas are thought to have been lost between 1971 and 1999. Natural forests should be protected and afforestation promoted.

**131. Diminish pollution of wetlands.**

Untreated wastewater discharged to vulnerable wetlands may result in changes in ecosystem functions and loss of species. Eutrophication caused by nutrient-rich effluents creates high biological oxygen demand.

**132. Improve solid waste management.**

Uncontrolled solid waste disposal sites handling toxic substances, pesticide residues and heavy metals pose additional risks to biodiversity.

**133. Stop uncontrolled clearance of farmland.**

The practice of clearing farmland for security purposes needs to be weighed against the agrobiodiversity loss, other environmental costs, and losses of cultural importance, such as olive groves, not to mention the detrimental environmental impacts of increased poverty.

**134. Improve the protection of rangelands.**

Overgrazing and improper management of rangeland has contributed to the loss of vegetation and erosion. There is a need for improved protection and rangeland management.

**135. Improve coastal zone management.**

While regional and Mediterranean cooperation should help, the Palestinians must resolve the fundamental environmental threats on the coastal zone in Gaza. The results and recommendations of the "Gaza Coastal and Marine Environmental Action Plan" should be taken into account.

**136. Stop overfishing.**

Ways and means must be sought to provide Palestinian with greater access to fishing grounds, both to prevent damage to local fish populations, and also to ensure that Palestinians traditionally reliant on fish do not, driven by necessity, resort to overexploiting other natural resources as well.

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