THE OMANI ENVIRONMENT OVER THREE DECADES
"Through God's mercy, our country has been blessed with valuable natural resources which are making it possible for us to build our national strength and which are providing the nation with the means to make the life of the people more prosperous. In maintaining its prosperity we have to commit ourselves to serve Oman and its people and to serve our Arab family and all mankind."

Sultan Qaboos Bin Said
28th November 1977

"As a result of our great concern for the protection of the natural environment, and our achievements in this respect, Oman has gained a respectable position among nations concerned with environmental protection; yet we still have to exert more effort and consider the special conditions relevant to this issue when we come to plan and implement development projects. We must proceed to develop contacts with concerned regional and international organisations. It is a duty, which must be undertaken by each citizen, to guarantee the protection of our natural resources and public buildings against any harmful effects, and protect the beautiful and distinguished nature, which God Almighty granted to our beloved Oman."

Sultan Qaboos Bin Said
18th November 1985

"Since we give high priority to the conservation of the environment and its protection from pollution, your positive contribution in this field will have a definite impact and be particularly appreciated. Environmental conservation is a vital matter and should receive the attention it deserves."

Sultan Qaboos Bin Said
21st December 1993

"In the field of environment we would like to confirm the importance of awareness of environmental issues. UNESCO plays an essential role in terms of the mobilization of international efforts to minimize damage resulting from natural hazards. We are pleased that UNESCO is the donor of this prize which is designated for the protection of the world environment and which will be awarded this year for the eighth time to honour outstanding contributions by individuals, groups, individuals, institutes or organizations from all over the world in the field of environmental protection and management."

Sultan Qaboos Bin Said
4th October 2005
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The Sultanate of Oman has since the outset of the blessed renaissance, and due to the wise vision of His Majesty Sultan Qaboos Bin Said and various Royal Directives, laid the foundations of sustainable environmental development. This integrated development strategy has taken into consideration socio-economic aspects, protection of the environment and conservation of its natural resources, and has realised the significance of establishing a balance between development requirements and environmental protection.

The Five Year Development Plans, which the Sultanate has implemented since 1975, include the basic principles that link development with environmental considerations. The Oman Economic Vision, which represents the development strategy up to 2020, is also the main basis for the preservation of non-renewable natural resources. The National Conservation Strategy (NCS) issued in 1996 incorporates the paramount vision of His Majesty as it takes into account integrated environmental directives.

NCS identifies objectives and main plans that link development with environment, conservation of resources and incorporation of environmental considerations in all phases of planning, in addition to preparation of administrative, institutional and legal frameworks and defining the roles of the concerned parties. NCS was also supported by Article 12 of the State Basic Constitutional Law which was issued by Royal Decree No. 101/96, which stipulates that the Sultanate shall be responsible for the protection of the environment and prevention of pollution.

Accordingly, the Sultanate has followed the rule of adherence to the basic principles adopted by the international community, and included in the regional and international environmental protection agreements to achieve sustainable development objectives. The country has also supported international efforts through cooperation and joint work with other countries of the world so as to maintain the safety of the environment and sustainability of natural resources for present and future generations. These efforts were crowned by designating 2001 and 2002 as Years of the Environment, during which many environmental projects were executed as well as national, regional and international activities and events.

The Sultanate continues with its efforts to enhance sound environmental management and concern for various vital environmental issues, the most important of which are: desertification, drought, air, soil and water pollution, wastes management, chemical substances management, and control of marine environment pollution, in addition to protection of wildlife species through conservation of biological diversity and their habitats, as well as maintenance of other natural resources. The Sultanate is also committed to capacity building and support training for manpower, enhancement of legislative and institutional structures in all environmental fields, the establishment of databases, the intensification of environmental researches and studies, and streamlining procedures through the establishment of electronic networks.

No doubt, enormous environmental and development achievements earned the Sultanate notable regard among nations worldwide, and this was clearly reflected in “DAPOS Forum Report for 2005”, where the Sultanate gained the second position in environmental management at the Arab world level.

To highlight these environmental achievements by diligent effort for over three decades, the Ministry of Regional Municipalities, Environment and Water Resources would like to issue this book as a witness to Oman’s modern history and all those achievements gained during the blessed renaissance, and as a source of pride to present and future generations as well.
LEGISLATIVE STRUCTURE

His Majesty's continuous concern for the environment made it possible to establish the basic legislative and institutional pivots, and is reflected in the government's efforts to successfully achieve the development objectives so that fair and balanced benefits can be reaped for all generations from Oman's diversified natural resources.

In this context, Royal Decree No. 34/74 issued in 1974, concerning the "Marine Pollution Control Law," became the first stepping stone in the legislative structure of our environment. This was followed by "Royal Decree No. 68/79 in 1979, establishing the "Council for Conservation of the Environment and Prevention of Pollution" which was chaired by His Majesty. The establishment of this Council was the cornerstone from which the construction of environmental legislation in the Sultanate thus developed.

Royal Decree No. 10/82 issued in 1982, the "Law on Conservation of the Environment and Prevention of Pollution" constituted the scientific and practical basis for general and special practices in the environmental field within a structured legislative framework. This law confirmed the importance and need to provide the greatest possible health and social welfare for the nation and citizens, protect its natural wealth and economic resources, preserve its historical and cultural heritage and avoid any immediate or long term damage or side effects which may appear as a result of the various development projects to be executed throughout the Sultanate.

To enhance this legislative structure, RD 10/82 was superseded by Royal Decree No. 114/2001, "Law on Conservation of the Environment and Prevention of Pollution" as well as by Royal Decree No. 115/2001 the "Law on Protection of Sources of Drinking Water from Pollution" and the "Law on Nature Reserves and Wildlife" issued by Royal Decree No. 6/2003.

In addition, many other regulatory legislations were issued including all the environmental work and natural resources conservation and protection aspects. All of them made it possible to establish an integrated modern legislative system which can constantly be improved in line with any further developments.

The objectives of this legislative system can be summarised as follows:

- Protect man and the environment from all sources, types and impacts of pollution.
- Conserve the country's natural resources and protect them from depletion and degradation.
- Protect wildlife and preserve the natural Omani components.
- Regulate sound environmental rules of practice and prevent violations.
- Establish environmental awareness programmes to address all levels of society.
- Enhance international and regional cooperation and solidarity and adhere to regional and international conventions.
Environmental activities are at the heart of many regulatory and development programmes and policies, all aiming at best planning and implementation for the benefit of the Omani environment and protection of its components, natural resources, ecosystems and prevention of all types and sources of pollution. Construction of environmental institutional activity includes the following:

1974 Establishment of the Office of the Advisor for Conservation of the Environment in the Diwan of Royal Court. Under the directives of His Majesty, this office has played a great role in spreading interest in the environment and natural resources in addition to its initiative of establishing and developing the project of reintroducing the Arabian Oryx in Jiddat Al Harasis.


1984 Establishment of the "Ministry of Environment" by Royal Decree No. 45/84. Its responsibilities were to implement the National Plan for Conservation of the Environment and Prevention of Pollution; issue of Decisions, Regulations and rules implementing the Law on Conservation of the Environment and Prevention of Pollution, together with assuming the responsibilities of the Council for the Conservation of Environment and Prevention of Pollution.


1986 Specifying the responsibilities of both the Ministry of Environment and Water Resources and the Council For the Conservation of Environment and Water Resources by Royal Decrees No. 91 and 92/86.

1989 Establishment of the Ministry of Water Resources and specifying its responsibilities under Royal Decree 100/89.

1990 Amending the organisational chart of the Ministry of Environment and specifying its responsibilities after the establishment of the Public Authority of Water Resources by Royal Decree No. 11/90.

1991 The Ministry of Environment and the Council for the Conservation of Environment and Prevention of Pollution were merged with the Ministry of Regional Municipalities to be the "Ministry of Regional Municipalities and Environment" by Royal Decree No. 117/91.

1999 Royal Decree No. 18/99 specifying the responsibilities of the Ministry of Regional Municipalities and Environment after cancelling the two Royal Decrees No. 117/91 and 59/92.

2001 The Ministry of Water Resources was merged, by Royal Decree No. 47/2001, with the Ministry of Regional Municipalities and Environment to become one Ministry titled the "Ministry of Regional Municipalities, Environment and Water Resources".

The continuous developments of these bodies clearly reflect that there is a growing rise in the national concern for the environment together with a need to sustain the related fields of achievements. Additionally Oman's institutions are now required to cope with the world's new developments within the context of increasing interest in the environment and the new issues emerging from the 1992 Earth Summit in Rio de Janeiro and further confirmed by the Third World Summit held in South Africa in 2002.
CHAPTER TWO

STRATEGIC PLANNING FOR ENVIRONMENTAL PROTECTION AND NATURE CONSERVATION
Background

In accordance with the Royal directives of His Majesty Sultan Qaboos Bin Said to the Cabinet in late 1984 to prepare a National Conservation Strategy for Oman, the Council for Conservation of Environment and Prevention of Pollution (CCEPP), the body concerned, was entrusted with the preparation of the strategy.

In February 1985, the CCEPP issued a decision to its General Secretariat to prepare a draft strategy. This matter was later on transferred to the Ministry of Environment, which organised a workshop in June 1986 (Workshop for the Preparation of a National Strategy for the Sultanate of Oman) in collaboration with United Nations Environment Program (UNEP) and International Union for Conservation of Nature and Natural Resources (IUCN), which recommended that the Ministry of Environment at the time should directly supervise the preparation of an overall national strategy that includes ecological aspects, evaluation of natural resources and specification of the relation between environment and development.

After the amalgamation of the Ministry of Environment and the Council for Conservation of Environment and Prevention of Pollution into the Ministry of Regional Municipalities by Royal Decree No. 117/91 to become the Ministry of Regional Municipalities and Environment, the ministry organised a national symposium to discuss the main objectives of the Strategy and determine the official environmental work method.

In 1995 the Strategy was endorsed by the Cabinet, who also approved its action plan as a guiding strategy for the five year plans. and the Ministries of Regional Municipalities, Environment and Water Resources and National Economy were charged with the responsibility of ensuring that the NCS programs were in harmony.

NCS main objectives

- Focus on renewable resources by means of monitoring and analysing factors defining or affecting their productivity plus conducting accounts of renewable resources to determine the relation between supply and demand for each, together with measuring and determining their availability and ability to meet the current and future development and life requirements in Oman.
- Confirm the importance of sectoral integration methodology of national cooperation for the use of resource management.
- Monitor the Sultanate's achievements in the field of nature conservation and protection of the environment with emphasis on advantages and disadvantages.
- Confirm the role and position of the Omani people as an integral part of the means and objectives of development.
- Suggest the most convenient and successful solutions towards negative effects and define the best ways or methods towards compatibility and harmony between nature resources and sustainable development.
- Prepare alternatives and options to the development and environmental work together with determination of actual proposals on which such vision relies.
- Propose political, institutional, legislative and coordination frameworks necessary for the support and implementation of the NCS.
- Define the regional and international dimensions of the NCS.
- Define the main features and priorities of a realistic program to implement the NCS and allocate the roles within the context of a joint national responsibility.
- Define technical and financial assistance needs required for the implementation of the NCS.
Furthermore, the strategy has reviewed the projected development trends in the Sultanate and its main achievements. Specific recommendations were presented with the aim of achieving specific objectives, i.e., connecting development with the environment, conserving resources, and incorporating resource accounts and environmental cost into the national income accounts, as well as feasible studies of the development programs and projects.

The strategy, within the available data and information, has monitored the renewable and non-renewable natural resources and proposed ways to improve the management and rational usage so as to ensure that sustainability of the resources will not be affected in the long run.

The strategy also demonstrates that the Sultanate has a diversified balance of renewable and non-renewable resources which are characterised by their integration and the making of sustainable development to be environmentally feasible and possible according to specific conditions for the management and rational use of such resources.

Development planning of sectorial coordination requirements should also be provided and should incorporate environmental considerations and natural resources accountability in all its procedures. The strategy concluded with summation of the most important elements and policies related to sustainable development of these resources, including but not limited to:

**Land and Water**

As well as land reform, the strategy has focussed on the viable increase of productivity, improving its management, and on features that save water in addition to affording rational source use and best management of water.

It has also focused on the importance of research studies for the use of moderately saline water in production of agricultural crops; cultivation of pasture lands and forests, as well as exploration for new water sources. The objectives of these were to give irrigation water a cash value, particularly in modern farms, with the aim of rationalising its use and achieving the envisaged integration between planning and implementation of the water sector development programs and projects.

**Fisheries**

The strategy aims at improving the understanding of the ecological and biological characteristics of the fisheries biomass yield by conducting more continuous research and intensive surveys as well as improving and rationalising fisheries management in both traditional and modern sectors. It also aims at improving statistical services in the field of fish production and control of losses from the total catch as well as motivating fishermen to form fishing societies equipped with relatively deep water fishing boats; applying strict control; raising awareness; firm enforcement of laws; proposing projects to the fisheries sector and proposing patterns of investments for future five-year plans.
Rangelands and Forests

The strategy aims at enhancement of legislation leading to protection and development of rangelands and forests. It also aspires to implement cultivation of 30 thousand hectares of forest and 60 thousand hectares of rangeland in the Sultanate during the coming thirty years as a part of planning to develop an economical wood resource based industry as a measure against desertification and improvement of the local climate.

Non-Renewable Resources (oil, natural gas and minerals)

The strategy has recommended rational consumption of energy to ensure sustainable development and environment protection. Due to the fact that the main non-renewable, available resources of oil, natural gas and minerals are of limited quantity, the strategy has defined a number of long-term use alternatives. It has also recommended that a National Energy Resource Use Plan be prepared to provide encouragement towards development of projects for both solar energy and wind power to produce alternative energy, particularly in remote areas where such sources are abundant.

The strategy has made estimates on the future supply and demand of the main products whose production depends on the use of non-renewable resources. Due to anticipated variations in the development path, the strategy has structured its accounts based on resource supply and demand and alternative growth rate options related to population, production and consumption extending to the year 2020.

Conservation of the Environment and Prevention of Pollution

The strategy also focuses on pollution resulting from misuse and mismanagement of natural resources and has addressed other pollution causes and sources such as industrial and consumer pollution. It concluded that current levels of development and progress have resulted in several types of pollution and their quantitative and qualitative accumulation, and that if these are not confronted, they will expose our population and environment to risks.

Consequently the strategy has proposed a number of programs and projects to combat causes of pollution and provide options to control it at source. The strategy was also concerned with environmental aspects related to preservation, conservation and beautification of historical and heritage sites in order to protect them from urban progression and agricultural and industrial expansion.

The strategy has designated a broad spectrum for enhancement of administrative, institutional, legislative and implementation requirements within the environment sector of the Ministry of Regional Municipalities, Environment and Water Resources. It has established designated environmental units for sectoral coordination between the Ministry and other institutions connected with the use of natural resources and sources of environmental pollution.

The strategy has also reviewed all the laws and Royal Decrees related to environmental duties and responsibilities as well as national executive regulations. Its conclusion is that the legislative structure is almost complete and satisfactory but that it requires continuous coordination, strengthening the implementation in order to meet national and international changes and requirements. In this respect, the strategy recommended redrafting the original “Law on Conservation of the Environment and Prevention of Pollution” so as to incorporate all pertinent changes in order to cope with the requirements and challenges of the twenty first century. This Law was issued on the 14th of November 2001 under Royal Decree No. 114/2001.
Flexibility and integration of self funding were also proposed by the strategy so that the financial and technical support necessary for its implementation could be affordably achieved. It also proposed to open the way forward for outside financial and technical support, within the context of applicable legislation, to thus benefit from Sultanate’s position as a Party to regional and international environmental conventions and organisations.

The Future Vision

The strategy has put forward options to be pursued by the Sultanate to achieve environmental balance within its overall development progress and the best methods and means for improving and developing interaction between Omani people and their environment and for establishing environmental awareness so they can understand their rights and the needs of future generations. It has focused on the importance of defining a framework of planning and development priorities and achievement within its long term national sector objective goals in the long run for all entities concerned with the implementation of the NCS:

1) Monitoring renewable resources and their ecological and biological diversity as well as evaluating how best to use them.
2) Defining the structural, functional and economic relations between renewable and non-renewable resources in Oman and evaluating the level of consistency between the socio-economic development and the environmental requirements for preserving natural resources.
3) Defining, evaluating and mitigating the levels of pollution in the Omani environment and the degradation of its resources.
4) Defining the horizons and the consistency of integrated approaches between the sustainability of renewable resources and economic and social development and proposal of methods for achieving a harmonious inter-balance.
5) Proposing the best methods through which the Sultanate can deal with regional and international communities toward implementing the NCS and to enable it to fulfil its role toward global environmental protection, conservation of natural resources and international heritage.
Main Goals

- Protecting wildlife habitats and productive renewable resources for sound and sustainable use.
- Conserving wildlife habitats and biodiversity of fauna and flora, particularly those of special significance.
- Establishing a high-quality structure for nature tourism and recreational facilities.
- Improving knowledge on eco-systems and elevating resource management capacities.
- Spreading awareness on the importance of biodiversity conservation and the sustainable use of biological resources.
- Issuing legislations to secure biodiversity conservation and also to create job opportunities for Omanis.
- Fair distribution of revenue from the sustainable use of resources, including genetic resources, on both national and regional levels.
- Encouraging regional and international collaboration in biodiversity conservation and sustainable use of natural resources.

Priorities of the Biodiversity Action Plan

The National Strategy and Biodiversity Action Plan is a continuous and periodic process, the provisions of which shall be implemented in the National Development Plans in a method that secures the sustainability of biodiversity conservation.

An effective national network has been established with a complete database on biodiversity, including species, eco-systems and reserves. This network shall be available to the public so that everybody from scientists and experts to individuals can have access to it.

The priorities of the National Action Plan of the Biodiversity Strategy are defined as follows:

Conservation of Natural Resources
- Issuing legislation for nature conservation areas and strict implementation of the legislations on wildlife protection and nature conservation.
- Developing a national program for evaluation and restoration of endangered species.
- Establishing a genetic resources center for plants and collecting species that need protection for germination or multiplication, as well as reinforcing research on new and alternate crops.

Land and Fresh Water Species
- Establishing a national database on eco-systems, nature conservation areas and endangered species.

Marine Species & Fisheries
- Developing integral plans for management of coastal areas and monitoring commercial fishing.
- Encouraging and supporting fish research and statistics.

Terrestrial & Aquatic Plants
- Improving pastoral management services, forestation and combating desertification.
Agricultural Resources
- Reclamation of agricultural lands and studying soil pollution attributable to chemical fertilisers and pesticides.
- Considering the environmental aspects in the management and implementation of different agricultural projects.
- Conservation of water resources and wise use of irrigation water.

Energy Resources
- Developing programs to compensate wildlife natural habitats affected by energy exploitation and related transport activities.

Minerals
- Carrying out feasibility studies and reviewing the cost and benefit of the existing national industries and mining activities to sustain the balance between development and environmental conservation.
- Issuing environmental guidelines for mining activities.
- Incorporating the principle of biological diversity protection in mining policies.

Industry, Technology & Services
- Carrying out training programs on biotechnology.
- Increasing the amount of financial allocations to biotechnology research and development.
- Developing and implementing a strategy and action plan for environmental safety in accordance with the International Protocol on Environmental Safety.
- Finalising the Priority Action Plan on tourism development in collaboration with the concerned authorities with special attention to the benefits of legal delineation of the planned natural landscape reserves and the impacts on the natural environment.

Urban Environment
- Implementation of MRMWR guidelines on land use, modern establishments, road plantation projects and protection of natural landscape areas.

Water Resources
- Studying, evaluating, monitoring and developing water resources along with preparing and implementing drought contingency plans.
- Expanding the service area of wastewater collection, treatment and reuse.

Environmental Contingencies
- Unification and enhancement of the organisational responsibilities at the concerned authorities specialising in management of disasters of potential threats to the environment.
- Encouraging initiatives and strengthening social and spiritual values.
- Encouraging the participation of society members, national organisations and the Private Sector.
- Implementing applied programs to encourage private initiatives in biodiversity conservation and management and environmental protection.
- Issuing and promoting guidelines and documents on environmental impact and dissemination of information.
- Incorporating current Islamic studies related to conservation of biodiversity.
CHAPTER THREE
ENVIRONMENT PROTECTION
ENVIRONMENT PROTECTION

Public health protection against all kinds of pollution and environmental conservation together with establishing the foundations of a balanced and sustainable development are amongst the primary goals of the nation. Efforts are therefore focused on the principle of team work between both government and the private sector as well as strengthening collaboration and coordination with regional and international organisations in emphasising the environmental aspect as a national priority in the development process plus making use of both national and international expertise in this field.

Environmental aspects have been established and incorporated in all levels of development planning and environmental management has been incorporated as a basic tool for elevating the quality of all development projects, not to mention the extra attention given to environmental monitoring and inspection as the "looking glass" for monitoring environmental situations supported by environmental impact assessment.
Environmental Planning

The balance between development and environment is established through applying environmental studies on the potential environmental impacts of all projects. Obtaining the Environmental Permit that is mandatory for all projects requires the incorporation of a study on the potentially negative environmental impacts and the measures applied to eliminate or mitigate them to the required extent.

In this context environmental assessment is carried out in four basic phases:

**Phase one**: Study of the site and how suitable it is for the project.

**Phase two**: The preliminary assessment at the preliminary design phase of the project where an Environmental Impact Assessment study (EIA) is carried out.

**Phase three**: Issuing a preliminary environmental approval for project implementation along with the legal and environmental conditions by which the owner shall abide.

**Phase four**: Issuing of the final environmental permit to establishments subject to fulfilment of the conditions stated in the preliminary environmental approval which is renewable for two years.

Environmental Assessment

Environmental monitoring, inspection and assessment programs include extensive follow up and inspection by the Ministry to all sources of pollution and all industrial establishments are bound to make sure they abide by the legal environmental conditions.
Air Pollution Monitoring

This process includes assessment of all industrial projects and applying strict conditions to eliminate the emissions of hazardous particles, gases and fumes as well as foul odours generated from different industrial activities. The stations of the National Air Pollution Monitoring Network (three stationary stations in Mina Al-Falaj, Rusail Industrial Area and Sohar Industrial Area) are continuously operating to monitor different kinds of pollutants and documenting the results in the connected network database. There is also a mobile unit for monitoring air quality which is continuously updated to detect all kinds of air pollutants in selected areas.

Noise Pollution Monitoring

Noise levels are monitored in different establishments and compared to the permissible limits during the routine field visits. Regular monitoring programs are also carried out in applicable areas and public places to make sure that noise levels are contained within the Regulations for Noise Pollution Control in Public Environment. All the necessary procedures and the relevant National Regulations are applied to control noise pollution whether in working or public environment.

Radioactive Materials Control and Management

This procedure includes issuing permits for the import, storage and use of radioactive materials and follow up the agencies handling such materials through field visits to storage and exploitation sites to make sure all safety measures are applied in the work area and to protect the public environment from the hazards of radioactivity in accordance with the Regulations for the control and Management of Radioactive Materials.

Ozone Depleting Substances Monitoring

This procedure is carried out in accordance with the Regulations for the Control and Management of Ozone Depleting Substances, in compliance with the articles of the Vienna Convention on Ozone Protection which the Sultanate joined in 1998 and the Montreal Protocol on Ozone Depleting Substances as well as the London and Copenhagen Amendments, to which the Sultanate is a member, by Royal Decree No. 73/98. Additionally, the Sultanate joined the Kyoto Protocol in 2004 by Royal Decree No. 107/2004. It is worth mentioning that in 1999, the Project on Implementing the National Program on Ozone Depleting Substances was ratified by the Multilateral Fund to implement Montreal Protocol.
As part of industrial advancement in the Sultanate, many industries are involved with different kinds of chemicals, either locally produced or imported. Risks and dangers may be associated with their unsafe or inappropriate use and could lead to significant hazards to the public health and environment. It is therefore essential to ensure all necessary legal, regulatory and technical procedures for sound and safe monitoring and management of chemicals. This requires constant monitoring and assessment of all phases of production, import, storage, handling, use and safe disposal of any waste in order to eliminate and decrease their hazards on both man and the environment.

The National Action Plan for the Management of Chemicals was developed in accordance with international procedures, efforts and puts emphasis on the importance of developing effective plans and programs for the sound and safe management of all chemical substances.

Objectives of the National Action Plan for the Management of Chemicals

The Plan aims at achieving sound and integral management of chemicals through:

- Coordination of national policies, legislations and infrastructures and implementing license control policies.
- Encouraging national, regional and international cooperation to enhance management of chemicals and prevention of pollution as well as creating cleaner processes and materials.
- Developing a mechanism for data collection on the sound use of chemicals and the potential risks of producing and discharging such substances into the environment along with methods to avoid or eliminate those risks.
- Spreading awareness on environmental safety among all members of society.

Context of the Plan

The Plan includes the following main aspects for sound management:

- Developing a legislative, administrative and technical foundation.
- Using chemicals to ensure sustainable development.
- Taking into consideration the sources of chemical pollutants and the life cycle of chemical substances.
- Enforcing banishment laws based on the principle of prevention is better than cure.
- Taking the necessary precautions to ensure sound use of chemicals and eliminating their risks.
- Consideration and assessment of cost and benefit as well as risk assessment preceding any decision process.
- The polluter pays.
- Adopting the best available scientific information and assessment methods.
- Providing sound technologies of chemical safety.
- Providing adequate information on chemical safety.
- Contingency plan to prevent chemical risks.

**Achievements of Chemical Substances Management**

- The Regulations for Handling and use of Chemicals in the Sultanate, issued by Royal Decree No. 46/95, represent the pioneer initiatives in the field of chemicals management and reflects the concern of the government toward human and environmental safety from hazards arising from misuse or unsound handling.

- Regulations for the Registration of Hazardous Chemicals and the Relevant Permits were issued by Ministerial Decision No. 248/97 together with formats for recording of chemicals, permits and listing of banned chemicals.

- An extensive site visit and inspection approach has been adopted to monitor all relevant locations so as to ensure the cooperation of handling agencies and their compliance with the chemical laws and regulations in force regarding use, storage and management.

- A comprehensive study has been conducted on Persistent Organic Pollutants (POPs) in the Sultanate.

- A complete chemicals database has been established for the Sultanate.

- Regulations have been issued regarding labelling systems on chemical substance containers.
According to the Law on the Conservation of the Environment and Prevention of Pollution, issued under Royal Decree No. 114/2001, waste is defined as "The various types of refuse resulting from industrial, mining, agricultural, handicraft, domestic, hospitals, public establishments or other operations, which are disposed, re-cycled or neutralised in accordance with the provisions of the laws in force in the Sultanate".

Waste can be divided into two main categories: non-hazardous waste, including (solid and liquid waste), and hazardous waste.

**Non-Hazardous Waste**

This type of waste is in itself not harmful to man or to the environment if it is handled with the appropriate methods.

Non-hazardous waste contains two primarily common categories as follows:

**A- Solid Waste**

Domestic waste as well as solid litter or waste generated from residential, commercial, industrial or agricultural activities or from other sources, like debris and scrap iron from construction and demolition work are some of the more significant sources of non-hazardous solid waste in the Sultanate.

Regional Municipalities collect domestic solid waste and transport it to sanitary landfill sites chosen. Some types of waste, like iron, paper, glass and aluminum cans, are recycled, as well as are other organic materials such as agricultural waste, which are then used in manufacturing organic fertilisers. Non-hazardous solid waste is disposed of in more than 245 sites around Oman.

**B- Liquid Waste**

Non-hazardous liquid waste is mostly generated from domestic activities or from the discharge of non-hazardous industrial waste. Such waste is reused or disposed by:

- Licensed wastewater treatment plants throughout Oman.
- Reuse of treated wastewater in the irrigation of crops, grass and ornamental plants as well as in aquifer recharge, after ensuring quality to the required standards.
**Hazardous Waste**

Is defined by Ministerial Decision 18/93 as "Any waste arising from commercial, industrial, agricultural or any other activities which, due to its nature, composition, quantity or any other reason is hazardous or potentially hazardous to human health, to plants or animals, to air, soil or water. This includes explosive, radio-active or flammable substances which may cause disease as well as those issued by a decision of the Minister."

Most hazardous wastes are generated from industrial, clinical or institutional activities and are handled according to the Regulations for the Management of Hazardous Waste. There are five primary sources of hazardous waste in the Sultanate: mining activities, crude oil activities, medical waste, chemical industries, pharmaceuticals and used oils. 113 sources of such wastes were identified and recorded in the Ministry’s environmental database.

Procedures for handling hazardous waste in the past were limited to storage, export, treatment and final disposal in approved sites in accordance with certain environmental conditions. Nowadays the work is focused on the management of such waste more accurately and logically by developing a system of issuing environmental permits related to hazardous waste and methods to control it, as well as treatment conditions at the production site together with the Ministry’s National Hazardous Waste Management Facility which is under planning and development.

**Hazardous Waste Management**

The Ministry aims to develop methods for hazardous waste management and to minimise their negative impacts, of which the following measures have already been taken:

- The issuance of Ministerial Decision No. 8/84 on the Discharge of Industrial Water into Public Wastewater Networks.
- Regulations for Hazardous Waste Management under Ministerial Decision No. 18/93.
- Conducting a comprehensive study on all the facilities and activities producing hazardous waste in the Sultanate. This included identification of the sources and quantities, research on the methods of storage, handling and complete disposal of such waste. All this data was incorporated in a special computer database that is regularly updated after the visits carried out to hazardous waste generating sites.
- Conducting a technical and economic feasibility study for the National Project for Hazardous Waste Management prior to its award to specialised private sector concessionaires or construction, operation and maintenance.
Oman has a unique marine environment in relation to other countries in the Arab region. Its coast is open to three important marine bodies: the Arabian Sea (Indian Ocean), the Gulf of Oman and the Arabian Gulf. The merger line between the marine and terrestrial eco-systems in coastal areas, especially in the transitional zone of the coastal strip, is sensitive to impacts from both sides. Hence the coastal strip is extremely vulnerable to pollution generated on both land or sea.

The Omani coast is vulnerable to a number of special environmental problems such as illegal discharge of oil and ballast water from ships and tankers passing through the Sultanate’s territorial waters together with the extended impact of these pollutants on beaches. Such impacts render them unsuitable for recreation and tourism and kill their value as natural habitats for turtle and bird nesting as well threatening the lives of other living species and creating beach erosion.

Uncontrolled fishing-related activities damage coral reef and deplete fish resources as well as leading to mortality of large number of rare marine turtles, whales and dolphin. Coastal areas are also affected by waste or by littering from urban developments in the same manner as are areas with scenic value, wildlife habitats and historic and archeological sites are also sometimes exposed to damage or destruction by encroachment of urban development.

**Coastal Zones Management Action Plan**

The National Conservation Strategy, after identifying the major environmental problems in those areas in the studies carried out by the IUCN, included proposals for protecting coastal zones and their natural and cultural resources so as to ensure sustainable development without damaging the marine eco-systems. Subsequent coastal zone management plans were developed to cover 3165 km from Musandam through Al Batinah, Muscat, Sharqiya to the coast of Dhofar.

The studies revealed erosion incidences in several areas of the Omani coast, especially in Al-Batinah, Musandam, Al-Sharqiya and Dhofar. This is eroding away important and vital coastal areas that encompass integral biological systems of the coastal zone. Khawas, dunes, mangrove trees and pristine beaches are dangerously exposed to damage and loss of aesthetic values as a consequence of development activities and tourism.

The Strategy indicated that coastal zone development is a process that requires the involvement of several agencies with mutual interests and specialties and calls for the unification of efforts of all agencies concerned with coastal zone conservation.

The Sultanate of Oman has a number of lagoons called Khawas. For example, Dhofar region has a group of lagoons of national and international importance which are home to mangroves and their rich biodiversity. In addition, the northern part of Oman has also many lagoons located in Sharqiya, Batinah and Muscat areas. Due to the importance of these fragile ecosystems and their role in maintaining the environmental balance, some of these lagoons were proclaimed protected areas.
The procedures of the Strategy include two parts:

A. Procedures related to land use planning such as designation of coastal land for different kinds of activities and implementing the relevant policies.

B. Procedures related to specific administrative control activities for organising the use of coastal zones, structure design, prevention of pollution, erosion and restoration.

Priorities of Coastal Zone Management. These include:

- Preventing further degradation of the coastal environment by taking the proper protection procedures such as establishing coastal nature reserves and designating specific areas for environmental management.

- Restoration of the degraded coastal environment.

- Conducting an EIA study on climate change in coastal habitats, including beaches, sand, salt flats, mangroves and coral reefs.

- Monitoring beach erosion and restoration.

- Public awareness on the critical status of coastal zones and their resources, along with their significant role in the sustainability of the development process.

- Effective implementation of MD number 20/90 and its amendments with regards to Regulations for Organisation of Coastal Setbacks.
Oman's marine environment is a part of the overall marine environment of the region wherein other nations are also endowed with similar geophysical and ecological features and conditions. Oman's territorial waters are most important to fisheries. They are characterised by their diverse species and are considered as the most important source of income after oil and natural gas. They are also important as renewable primary food resources.

In the context of protecting and preserving the marine environment, a comprehensive action plan has been developed which includes:

- Setting out guidelines with regard to the Sultanate's procedures for dealing with incidents.
- Defining the organisational structure through which oil pollution incidents are controlled.
- Defining the responsibilities of Government authorities and the other agencies which will actively participate to combat oil spill incidents.
- Developing guidelines on reporting oil spills and assessment and dealing with them.
- Providing the basic information on the available resources of the Sultanate such as availability of equipment and tools to combat oil spill incidents.

The Sultanate has undertaken considerable measures towards protecting the marine environment from pollution. They include:

**Special Marine Area**

In October 2002 the Council for Protection of the Marine Environment of the International Maritime Organisation (IMO) agreed to classify Oman's marine environment in the Arab Sea, from Ras Al Hadd to the boundary of Republic of Yemen, as a "Special Marine Area." This decision was the result of Oman's special efforts in protecting the marine environment within the framework of its work and celebrations for the second Year of Environment 2002.

Such classification requires specific mandatory methods for protection against oil pollution for areas subject to active maritime operations and which are characterised by their unique environmental and marine systems. This classification will enhance the Sultanate's ability and efforts to take all necessary procedures against the ship and oil tankers violating the MARPOL Convention 73/78 standards of waste discharge.

**Monitoring Oil Tankers in the Territorial Waters**

The geographic location of the Sultanate in the Straits of Hormuz is considered the gateway to the Arabian Gulf and the most globally important area for the production, exporting and movement of crude oil tankers wherein the navigation of loading and transporting oil tankers are the most hazardous threats to Oman's marine environment. Dozens of tankers cross the Straits of Hormuz each day and although spill incidents do not happen continuously, the daily operation and navigation of oil tankers may result in some spillage of oil and other wastes.

Therefore, a suitable mechanism under the National Oil Spill Contingency Plan, supervised by the Ministry, has been developed and implemented in coordination with other concerned authorities, in order to monitor oil tankers in Oman's marine environment and implement all appropriate measures.
Reception Facilities Project

Navigation activities in the Arabian Gulf, the Gulf of Oman and the Arabian Sea have undoubtedly had negative impacts on the marine environment, especially where pollutants and wastes from local, regional and international ships and tankers made landfall on sensitive coastal ones and beaches. The Sultanate therefore joined the MARPOL Convention 73/78 in order to address and prevent such serious marine pollution impacts.

It is worth mentioning that the International Maritime Organisation (IMO) obligates all members of MARPOL to provide ship waste reception facilities and maintenance workshops in all ports, as well as other ports, in order to protect the marine environment. Such facilities must be qualified to receive ships' wastes as per the international conventions in this respect.

The Regional Plan for Waste Reception Facilities was subsequently developed in order to implement the Convention and a specialised company was therefore assigned, in coordination with (ROPME), to establish and operate specialised and dedicated reception and waste treatment facilities. In its continuing efforts to protect the marine environment, the Sultanate is currently working to get all its remaining northwards sea areas also suggested to be classified as a Special Marine Area so that shipping in all areas will be bound by MARPOL regulations and conditions. Final achievement is dependant on the provision of further reception facilities as an area cannot be classified if it does not have accompanying reception facilities.