

National Action Plan

for the

Protection

of the

Marine Environment

From

Land-based Activities

MALTA

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Preface

Background to the GPA

In 1995, 108 countries including Malta and the European Commission, concerned about the state of the world's coastal and marine environments, adopted the Washington Declaration, and made a commitment to ensure that, through improved governance of coastal and marine environments, they would protect and preserve the marine environment from the impacts of land based activities. They agreed to implement a Global Programme of Action (GPA).

At the regional level, and as a contracting party to the Barcelona Convention, Malta signed and ratified the revised LBS Protocol¹, which covers watersheds on the landward side of the Mediterranean. In effect the whole of Malta falls within the remit of the LBS Protocol.

Further to the Protocol, and with support from the Global Environment Facility (GEF), the Contracting Parties to the Barcelona Convention adopted (in Monaco, November 2001), and initiated a project for the determination of Priority Actions for the further elaboration and implementation of a Strategic Action Programme (SAP) to address pollution from land-based activities for the Mediterranean Sea (SAP MED). The overall goal of this three-year project was to improve the quality of the marine environment in the Mediterranean region by a better shared-management of land-based pollution through improved international co-operation.

Within the framework of the Strategic Action Programme (SAP) to address pollution from land based activities, Malta has formulated this National Action Plan (NAP) for the reduction and elimination of land-based pollution. The designated national authority for the coordination of this task is the Environment Protection Directorate of the Malta Environment and Planning Authority.

One key objective for the NAP is to eliminate by the year 2025, discharges of contaminants from point sources, in conformity with the Land-Based Sources Protocol. The progress in achieving this objective will be assessed in 2010, by when a 30 to 50% reduction (depending on the targeted contaminant) in the contaminants' releases or emissions is expected to be reached.

In order to be in a position to assess such progress, the first phase in the formulation of the NAP would be to prepare a National Baseline Budget (BB) of emissions and/or releases for the SAP targeted pollutants. The base year for this inventory of emissions or releases is the year 2003.

¹ Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources and Activities. This protocol was signed in Syracuse in 1996 and takes into account the Global Programme of Action for the protection of the Marine Environment against pollution from land based activities adopted in Washington in 1995.

In order to be in a position to compile the BB, a National Diagnostic Analysis (NDA)² with baseline date relating to 2003 has been carried out, based on information existing in 2004. This NDA identifies and assess the national conditions and issues, including:

- Nature and severity of problems;
- Contaminants and their sources;
- Physical alterations and degradation of habitats;
- Sources of degradation;
- Geographical areas of concern.

The inventory and this assessment of the importance of the issues is the basis for the elaboration of this NAP.

The format of the present document follows guidance³ given in this respect by the MED POL secretariat which in turn largely follows the specific approach and terminology used by the GPA/LBA in relation to various land-based activities (LBAs) and waste categories

² The BB and NDA has been carried by Professor Victor Axiak as national expert commissioned by the Coordinating Unit for the Mediterranean Action Plan (UNEP), with the assistance of the Environment Protection Directorate.

³ Guidelines for the Preparation of National Action Plans for the Reduction of Pollution of the Mediterranean from Land Based Sources {UNEP(DEC)MED/GEF WG.245/3}
National Action Plan for the Protection of the Marine Environment from Land Based Activities.

Chapter I: Scope

Introduction

For an island state like Malta, coastal and marine environments constitute our main natural resource capital, by and within which, our socio-economic developmental aspirations take place. If these resources are not protected and managed in a sustainable manner, the country consumes the natural capital on which its development is to be based. This concern is to a significant degree, also shared by the general public.

Malta is the southernmost member state of the European Union. It consists of two main islands (Malta and Gozo), a smaller island (Comino) and a number of minor islets and rocks⁴ located 96 km south of Sicily and 320 km from North Africa.

Island	Area (km ²)	Perimeter of coastline
Malta (including Manoel Island)	246.5	193.32
Gozo	65.79	55.09
Commino	2.86	14.54
Minor islets and rocks	0.21	8.26
Total	315.36	271.22

Malta is thus a maritime nation and the whole of the country can be considered as falling within the definition of a 'coastal area' for the purposes of the LBS protocol. For a **small island**, the coastal and marine environments thus hold special significance in that (like in all small islands) there is a relatively large ratio of coastal 'environment' to total land 'environment'. Insularity also introduces added complexities which are not generally conducive to sustainability.

Malta has one of the highest population densities in the world, amounting to around 1300 persons per square kilometer. The economy is to a large extent dependant on tourism. Arrivals have continued to increase since 1996, though some decline is reported over the past 2 years. The number of tourists is about 2.5 times the population, and if converted to annual resident equivalent, tourists residing in Malta in recent years amounted to about 7% of the Maltese population in any one year. This high population density, coupled with the influx of mass tourism are exerting significant anthropogenic pressures on our coastal areas and waters through increased production of solid and liquid wastes, over-exploitation of our limited beach resources, coastal traffic congestion as well as increasing demands for coastal lands for touristic development and other infrastructure.

Insularity and high population density, and thus scarcity of space are the factors which together produce a specific combination of circumstances which lead to a remarkable degree of pressure upon the coastal and marine environment, originating from land based activities and processes, which may be unique.

⁴ Mallia, A., Briguglio, M., Ellul, A.E. and Formosa, S. 2002. Physical Background, Demography, Tourism, Mineral Resources and Land-Use. In: *State of the Environment Report for Malta, 2002*. Ministry for Home Affairs and the Environment. August 2002. 120 pp.

Over the last decade, Malta has also undergone changes in demographic, ecological and socio-economic aspects and, as a new EU member state, in political terms as well. Thus the coastal and marine environment is on the one hand under a continuously increasing threat from the very success that Malta has enjoyed in a booming economy, and on the other hand is potentially able to be given enhanced protection through the incorporation into national legislation of the EU's environmental acquis.

Land-based activities such as agriculture and animal husbandry, mineral extraction, the building of roads, housing and tourism infrastructure, as well as recreational activities both on the land as well as at sea, can destroy critical habitats both on land as well as in the marine environment. Domestic, agricultural and industrial production processes increase the nutrient and pollutant loading, that contaminates ground and surface waters, and eventually the marine environment. This can result in algal blooms and contaminated seafood products, and affect the health of the coastal and marine environments upon which we are dependent. Some pollutants can accumulate in eco-systems and food webs.

It is essential that our activities on land are managed so as to preserve these ecosystems for sustainable use and development.

The key objective for this National Action Plan is to eliminate by the year 2025, discharges of contaminants into the marine environment in conformity with the Land Based Sources Protocol. The progress in achieving these objectives will be assessed in 2010, by when a 30 to 50 percent reduction (depending on the specific targeted contaminant) in the contaminants' releases and emissions is expected to be reached.

Malta's goals under this NAP are to:

- protect human health
- reduce the degradation of the marine environment
- remediate degraded areas
- promote the conservation and sustainable use of coastal and marine resources
- maintain the productive capacity and biodiversity of the marine environment.

Although many actions are being taken to protect the marine environment, most of these are carried out in an as yet uncoordinated and un-integrated manner. This has already been reported upon in Malta's National Report, submitted by the Government of Malta to the World Summit for Sustainable Development in 2002. The exploitation of the marine and coastal environment has historically been addressed in a sectoral manner, with inadequate strategic long-term direction. The majority of coastal uses have been developed in a manner that has not considered the implications on the natural processes, cultural resources and other legitimate uses. In addition, marine resource management is still hampered by the absence of a property management system similar to that adopted on land.

This NAP should serve to bring about a better collaborative approach in the shared responsibilities of those entities having jurisdiction on aspects affecting the protection of the coastal areas and the marine environment.

Methodological context

Following the recommendations of MAP, which in turn are based upon those of the UNEP GPA, this NAP adopts the recommended procedural process, consisting of:

- 1 The identification and assessment of the problems
- 2 Establishing the priorities for action
- 3 Setting goals and management objectives
- 4 Identification, evaluation and selection of strategies and actions
- 5 Identification of criteria for evaluation of effectiveness
- 6 Development of a programme of support elements

This National Action Plan is based upon in-depth scoping and fact finding studies (the National Diagnostic Analyses, and the Baseline Budget) carried out in 2004, having as a base the year 2003.

The BB, and the National Diagnostic Analysis are based on existing information at the time. This NDA served to identify and assess the national conditions and issues, including:

- Nature and severity of problems;
- Contaminants and their sources;
- Physical alterations and degradation of habitats;
- Sources of degradation;
- Geographical areas of concern.

In view of the relatively small geographical extent of the country, this National Action Plan covers the whole country as a single administrative region and is based on the thematic approach. The action plans proposed for the required reduction in the emission of pollutants are based on the environmental issues identified throughout the NDA and BB, and the sectoral activities which give rise to them.

Legal Framework

for the Protection of the Marine Environment from Pollution in Malta

Introduction

Protection of the marine environment in a maritime country like Malta where the number of stakeholders concerned with coastal/marine issues is proportionately high in relation to the coastal length requires special coordination efforts and skills. Several agencies and institutions having jurisdiction over particular geographical areas or uses of the coast. In addition to these formal or official entities, many Non Governmental Organisations and indeed the general public itself have a 'natural' right to participate in the decision making process on issues affecting the coastal areas, the main concern being to ensure and promote equitable access to coastal resources.

International commitments

The implementation of coastal zone management is the subject of a number of international agreements. Some of these target general issues whereas others are more sector-specific. Malta is party to a number of these international agreements, the two most important being the UN Convention on Biological Diversity (Rio Convention) and the UN Law of the Sea (UNCLOS). On a regional level, the most important coastal management plan established for the Mediterranean is the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP), with its various topical protocols. Indeed this national action plan is intended to implement the obligations deriving from one such protocol.

National legislation

The major legal tool for environment protection in Malta is the Environment Protection Act of 2001, which repealed an earlier Environment Protection Act (1991). The Competent Authority for the implementation of the EPA is the Environment Protection Directorate within the Malta Environment and Planning Authority.

Within the framework of the EPA 2001, "environment" is taken to mean "the whole of the elements and conditions, natural or man made, existing on earth, whether together or in isolation" The definition of environment includes air, water and land; all the layers of the atmosphere; all organic and inorganic matter and all living organisms; all ecosystems; and the landscape.

While the implementation of the EPA lies within the remit of the Environment Protection Directorate, the EPA states that it is the duty of every person to protect the environment and to manage natural resources in a sustainable manner. Nonetheless, the competent authority has specific duties related to the implementation of the Act including advising on the setting of environmental standards, establish objectives, issue permits, establish threshold levels of discharge, monitor environmental quality, publishing reports on the state of the environment, and others. Subsidiary legislation under the EPA reflect the various obligations arising from the EPA, including protection of the marine environment through its sustainable use and control of discharges.

Upon Malta's accession to the European Union, European Directives have been transposed into subsidiary legislation falling under the EPA. What follows is a brief review of subsidiary legislation falling under the EPA that is specifically related to protection of the marine environment from Land Based Pollution.

CD 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment

Directive 76/464/EEC, commonly known as the dangerous substances directive (DSD), was transposed into LN213 of 2001. The scope of the legislation is the setting up of a permitting system to control discharges of List I substances (substances that are toxic due to their persistence, toxicity and bioaccumulation) and to permit and formulate pollution reduction programmes for List II substances, which need to be controlled, but are not as harmful as List I.

The types of operations that are to be controlled by the permitting regime set up under the DSD, are given in CD95/337/EC. The operations applicable for Malta are sewage discharges, discharges from power stations and discharges from shipyards.

The Commission has issued a number of Daughter Directives to the DSD, which give emission limit values for discharge into the aquatic environment as well as quality objectives for the concentration of those substances in water, sediments and also biota. The Daughter Directives, as transposed in Maltese legislation are the following:

- LN218/2001 on the limit values and quality objectives for hexachlorocyclohexane discharges regulations, 2001.
- LN219/2001 on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry regulations, 2001.
- LN220/2001 on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry regulations, 2001.
- LN221/2001 on limit values and quality objectives for cadmium discharges regulations, 2001.
- LN227/2001 on limit values and quality objectives for discharge of certain dangerous substances into the aquatic environment regulations, 2001

CD 91/271/EC – The Urban Wastewater Treatment Directive

The objective of this Directive is to protect the environment from the adverse effects of discharges of urban waste water and of waste water from industrial sectors of agro-food industry.

It aims to provide prior regulation or specific authorization for all discharges of urban waste water and industrial waste water from the particular sectors mentioned in the Directive, as well as for all discharges of industrial waste water into urban waste water systems and to provide urban waste water collecting systems (sewerage) and treatment plants for all agglomerations above 2.000 population equivalents (widely used measurement unit for the organic pollution of waste water equalling to the average pollution load of one person per day). Member States must publish situation reports every two years and establish implementation programmes.

This Directive was transposed into LN 340/2001. Malta has been granted a transition period for its implementation, based on the phased construction and operation of three sewage treatment plants, two in Malta and one in Gozo. The date agreed for the full implementation of this regulation is March 2007.

CD2000/60/EC – The Water Framework Directive

The WFD is the result of a complete restructuring process concerning European Water Policy, the directive was adopted in December 2000. The WFD addresses the increasing awareness of citizens and other involved parties for their water.

The key aims of the Water Framework Directive are:

- expanding the scope of water protection to all waters, surface waters and groundwater
- achieving "good status" for all waters by 2015
- water management based on river basins
- "combined approach" of emission limit values and quality standards
- getting the prices right
- getting the citizen involved more closely
- streamlining legislation

The WFD adopts a system of management by river basin according to the natural geographical and hydrological unit. For each river basin district a "river basin management plan" will need to be established and updated every six years, and this will provide the context for the co-ordination requirements identified above

There are a number of objectives in respect of which the quality of water is protected. The key ones at European level are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. All these objectives must be integrated for each river basin.

One further important aspect of the WFD is the combined approach of emission limit values and quality objectives as opposed to the 'traditional' dichotomy in approach to pollution control at European level, with some controls concentrating on what is achievable at source, through the application of technology; and some dealing with the needs of the receiving environment in the form of quality objectives. Both are needed in practice and the Water Framework Directive formalises this.

In Malta, the Water Framework Directive has been transposed as LN194/2004 and entered into force on the 23rd April 2004.

CD 96/61/EC - Integrated Pollution Prevention and Control (IPPC)

The EU has a set of common rules on permitting for industrial installations, set out in the IPPC Directive of 1996. The IPPC Directive is about minimising pollution from certain industrial installations throughout the European Union. All installations covered by Annex I of the Directive are required to obtain an authorisation (permit) from the relevant authorities. The permits must be based on the concept of *Best Available Techniques* (or *BAT*), which in some cases means quite radical environmental improvements.

"Integrated" means that the permits must take into account the *whole* environmental performance of the plant, i.e. emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, risk management, etc.

In Malta, the IPPC directive was transposed by LN165/2001, later amended by LN234/2002. Existing installations have to be applying BAT by 2007, while the Directive enters into force immediately for new installations. In Malta there are 19 existing IPPC installations, with two of the three operators falling under the permitting system of CD76/464/EEC being also IPPC sites.

CD 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources

Council Directive 91/676/EEC (referred to as the Nitrates Directive) concerning the protection of waters against pollution caused by nitrates from agricultural sources was adopted on 12 December 1991. The above mentioned sister Directive 91/271/EEC (Urban Waste Water Treatment) was adopted on 21 May 1991. This Directive aims to reduce water pollution caused or induced by nitrate from agricultural sources and to prevent further pollution of this type. It relates to the eutrophication of natural waters and the contamination of waters used as drinking water sources.

To comply with the Nitrate in Agriculture Directive, Malta has identified waters affected by nitrate pollution and designate these and the areas draining into them, as Nitrate Vulnerable Zones (NVZs). Within these NVZs, remediation measures, focusing on the reduction of nitrate pollution, must be implemented. These measures must contain certain mandatory actions, as part of a NVZ Action Programme, including restrictions of the amount of fertilizer that may be applied to land annually. All of Malta has been designated as a NVZ.

Finally, a sound water quality sampling programme, focusing on nitrate concentrations in groundwater and surface waters, must be established in order to evaluate the impacts of nitrate pollution, including the likelihood of eutrophication in inland and coastal waters.

Institutional Framework

Introduction.

The successful implementation of this National Action Plan requires the participation and collaboration of many entities.

This NAP is required to constitute a comprehensive management and policy framework to assist Government, industry and all other stake-holders in prioritising their sustainability development requirements

The following institutions, agencies or departments have been identified as having specific roles and tasks in the implementation of the targets specified in this document. Others may have more minor roles.

In 1992, a Ministry responsible for the Environment was set up, with a portfolio that covered environmental protection as well as public works. The Environment Protection Department acted as the executive arm of the Ministry, supporting it by issuing policies and regulations, and seeing to their enforcement.

The Planning Authority was established under the Development Planning Act of 1992 for the promotion of proper land development and the control of such development in accordance with policies, plans and conditions approved by the Government. The Authority was responsible for the preparation of the Structure Plan and supplementary documents, the conduct of consultations with the public and private sector, as well as the publication of an official manual containing a list of the approved policies, plans, conditions and procedures laws of Malta. The Development Planning Act was amended in 1997 to include the control of development at sea.

In 2002, the Environment Protection Department merged with the Planning Authority, forming the Malta Environment and Planning Authority (MEPA) within the then Ministry of Home Affairs and the Environment, now Ministry of Rural Affairs and the Environment. The authority is an autonomous body answerable to the minister responsible for the environment.

MEPA: The Malta Environment and Planning Authority.

The Malta Environment and Planning Authority is the competent authority for the implementation of the European Union's environment acquis. Some of these obligations are shared with other authorities.

The Authority is composed of two main Directorates; that responsible for Environment and another responsible for spatial planning.

The Environment Protection Directorate:

The Environment Protection Directorate, (EPD) within MEPA is the regulatory entity that caters for the protection of biological diversity, pollution prevention and control, and resource management. It is made up of three sections, one dealing with nature protection, another with resources management which also includes wastes and minerals and a third with pollution prevention and control.

The Directorate is responsible for the implementation of the Environment Protection Act (Act XX of 2001) and for the formulation of environmental policies and regulations. Enforcement of environmental legislation is the task of the Environment Protection Inspectorate, assisted by the Administrative Law Enforcement section of the Police. It is the Directorate's duty, however, to act as guardian and to ensure that the executive police enforce the law and seek judicial redress in case of infringement.

The Pollution Prevention and Control Unit within EPD is the body primarily and directly responsible for the prevention control and monitoring of land-based sources of pollution. Its current responsibilities include amongst others, atmospheric and marine pollution control, chemical and industrial risks management, contaminated sites and responsibility for the inspectorate in these areas.

The Resources Management Unit is responsible for regulating waste management activities and for quarrying activities, as well as for running the EIA procedures and statutory and public consultations required for many categories of development taking place in Malta.

The Planning Directorate:

Through the Planning Directorate, the Malta Environment and Environment Authority is entrusted with the task of the periodic revision of the Structure Plan. To fulfil its mandate the Directorate carries out surveys on those matters affecting the character and quality of the built environment. Extensive opportunities are guaranteed by law for individuals and organizations to make representations to the Authority when the latter is reviewing the Structure Plan.

Furthermore, the Planning Directorate may consider it necessary to prepare more detailed proposals than those embodied in the Structure Plan, so as to ensure the proper and effective management of development. Such plans, which are called subsidiary plans, can be subject plans, local plans and action plans, as the case may be.

Another main function of the planning directorate is to regulate, through permitting, all types of spatial and land use development. This task is delegated to three development control boards. The larger projects are decided by the authority's board itself. In all types of development the public is invited to make and comments, suggestions or objections, and decisions are held during meetings open to the public.

Large projects require the carrying out of environmental impact assessments, and a formal public consultation process.

The National Commission for Sustainable Development

The Environment Protection Act (Act XX of 2001) establishes the National Commission for Sustainable Development (NCSA) under the Chairmanship of the Prime Minister. According to Section 8(7) of the Environment Protection Act the functions of the NCSA are to advocate sustainable development across all sectors of Malta, review progress in the achievement of such sustainable development and to build consensus on action needed to achieve further progress. The NCSA is to identify any relevant processes or policies which may be undermining sustainable development and propose alternative processes or policies to the Government for adoption. The NCSA is also to identify trends which may significantly give rise to unsustainable development and which will not be reversed on the basis of current or planned action, and recommend action to reverse such trends. The main task of the NCSA is to prepare and pilot the implementation of the Sustainable Development Policy for Malta.

The setting up of the NCSA is expected to encourage and stimulate good practice in the use and management of natural resources, in particular their minimal use and maximum reuse by recycling in an environmentally sustainable manner. In carrying out the above-mentioned functions, the Commission may appoint advisory committees to make recommendations on specific subjects or actions. The recommendations and decisions of the Commission do not have an executive force but are to be considered as authoritative recommendations of best practice in achieving sustainable development.

Other Relevant Institutions

Department of Public Health

The *Public Health Department*, which falls under the auspices of the Ministry of Health, is responsible for air quality and water quality from a public health perspective as well as for the reporting and monitoring of bathing water quality.

Department of Agriculture

The *Agriculture Department*, is responsible for agricultural policy, agro-industry, veterinary services, afforestation, the importation and use of pesticides and the management of certain natural resources such as soil.

Department of Fisheries

The *Department of Fisheries*, is responsible for marine life for harvesting purposes, for fishing methods, the conservation of fishing stock and for aquaculture.

Department for Civil Protection

The *Department for Civil Protection* is responsible for co-ordinating matters during national emergencies, including environmental emergencies such as major oil spills.

Drainage Department of the Water Services Corporation

The *Drainage Department* is responsible for the environmental standards relating to the public sewerage system, as opposed to the Health Department and the Environment Protection Department which are responsible for safeguarding the marine environment for reasons of public health and the environment protection, respectively.

Malta Resources Authority

The *Malta Resources Authority* is a public institution with regulatory responsibilities, monitoring and review over water, energy and mineral resources in the Maltese Islands.

Malta Standards Authority

The *Malta Standards Authority*, which was set up recently, is responsible for setting standards including environmental standards. The Malta Standards Authority also runs regular courses on International Standards on Environmental Management (ISO14000 and EMAS). The Authority has transposed all European and International Standards on sustainable development as national standards.

Malta Tourism Authority

The *Malta Tourism Authority* is responsible for developing and regulating all aspects connected with tourism. The Ministry for tourism is responsible for beach cleaning activities and manages the Oil Pollution Combating Module.

Malta Maritime Authority

The *Malta Maritime Authority* is responsible for maritime affairs which include also certain environmental aspects such as pollution control in internal waters and shipping standards. This Authority (jointly with EPD) also controls dumping at sea.

Occupational Health and Safety Authority

The *Occupational Health and Safety Authority* (OHSA) is responsible for occupational health and safety issues and falls under the auspices of the Ministry for Social Policy. The Authority is also responsible for the Radiation Protection Board.

Maritime Squadron of the Armed Forces of Malta

The *Maritime Squadron of the Armed Forces of Malta* is responsible for the maintenance of law and order in the territorial sea and the contiguous zone. It also contributes towards the control of major marine spills.

WasteServ Malta Ltd.

WasteServ Malta Ltd. was established in November 2002. It is responsible for organizing, managing and operating integrated systems for waste management including integrated systems for minimisation, collection, transport, sorting, reuse, utilistation, recycling, treatment and disposal of solid and hazardous waste.

Cleaner Technology Centre

The Cleaner Technology Centre is set up through a collaboration agreement between MEPA and the University of Malta. It serves as an information centre advising industry on BAT to reduce pollution and energy use. The centre is also Malta's focal point on the CP RAC

Public Transport Authority (ADT).

The Public Transport Authority (ADT) is responsible for regulating transport related matters and is specifically responsible for supervising the bi-annual testing of all vehicles for road worthiness and compliance with emission limits.

Local Councils

Local Councils, set up by the Local Councils Act have functions which impact on the environment related to the provision for the collection and removal of refuse from public or private places, the maintenance of receptacles for the temporary deposit and collection of waste. Also, they may make recommendations to any competent authority for, or in relation to, any planning or building scheme.

Chapter II: National Issue/Impacts Matrix

Introduction

For the purpose of the NAP, the whole of the Maltese Archipelago is being considered as a single administrative region. This present section, reviews the results obtained from the preliminary ranking of priority issues undertaken in 2004 when the NDA was being compiled. The results of the final ranking of priority issues as identified by a national team of experts and stakeholders will then be presented.

Preliminary ranking of Priority Issues

During the compilation of the NDA for Malta, a preliminary ranking of the various environmental issues identified, had already been carried out (Axiak 2004). 14 environmental issues were considered as required by MAP and are listed below:

- Sewage (including BOD from industrial discharges)
- Urban Solid Waste
- POPs
- Heavy Metals and Organometallic compounds
- Organohalogens
- Radioactive Substances
- Nutrients and Suspended Solids
- Hazardous wastes
- Shoreline construction (coastal works)
- Erosion
- Mineral extraction (quarries/sand)
- Saltmarsh/sand dunes/wetland alteration
- Marine waters and coastal watershed alteration
- Biological alteration

Such issues were ranked taking into account the relative importance of each on four **target levels** as follows:

- Public health (including food safety);
- Coastal and marine resources;
- The health of ecosystems;
- Socio-economic impacts.

In presenting the resultant preliminary ranking, Axiak (2004) had made it clear that the prioritisation and ranking had been carried out solely by himself as based on the available data, and as assessed through experience. As such prioritisation was incomplete and to a certain extent subjective. It did in no way represent the official policies or views of the Environment Protection Directorate, to whom this NDA was submitted. As such, such prioritisation was to be considered as preliminary and submitted to stakeholders for further discussion.

The relative significance of the various environmental issues (as identified by the MAP unit) was assessed for different regions within the Maltese Archipelago. Axiak (2004) pointed out that the choice of such regions was not necessarily determined by any considerations of type of coastline, administrative boundaries, or population density but rather by the need to present each region in a series of figures which would fit the present report.

For each environmental issue, the **geographical extent (Score A)** of the impacted areas within a specified region was indicated on a scale of 1 to 5, as follows:

- Score 0: No parts within the region are impacted.
- Score 1: *Only one site (or a diffuse/undefined area) within the region is impacted.*
- Score 2: Two sites, or a number of isolated and relatively small sites within the region are impacted;
- Score 3: More than 2 sites which are significantly large are impacted;
- Score 4: The impact or pressure is felt throughout the region (i.e. coastline)

Subsequently, the **significance of the impact or pressure (Score B)** was assessed and scored on a scale from 0 to 4, as follows:

- Score 0: No known impact.
- Score 1: *Low levels of occurrence of pollution or pressure, and low level of significance of impact.*
- Score 2: Low levels of occurrence of pollution or pressure, and moderate to high level of significance of impact
- Score 3: Moderate levels of occurrence of pollution or pressure, and moderate to high level of significance of impact;
- Score 4: High levels of occurrence of pollution or pressure, and severe level of impact;

Therefore this impact score took into account (and therefore distinguishes between) both the relative loads of pollution or degree of pressure as well as the level of severity of consequence of such impact. For example the level of a carcinogen may be very low and below background levels, but carcinogenicity must be considered as highly damaging to human health. Alternatively, a particular pollutant may be present in exceedingly high levels but its biological impact (or consequence), even at such high levels may be low.

The scale of impact for each environmental issue per target level. was computed by multiplying Score A by Score B. In this manner, the degree and prioritisation of each environmental issue is being graded in terms of **environmental risks (risk index)**. One definition of such an environmental risk (as adopted in the present report) is the probability multiplied by the consequence of an adverse or hazardous event happening.

Finally the total risk index for all the four target levels was computed per issue by adding all the four individual scales of impact per target level.

The highest possible total risk index that may be obtained for any one particular environmental issue is therefore 64 (4 X 4 X 4).

Figure 1 represents the total computed risk indices per environmental issue per region, ranked in order of priority.

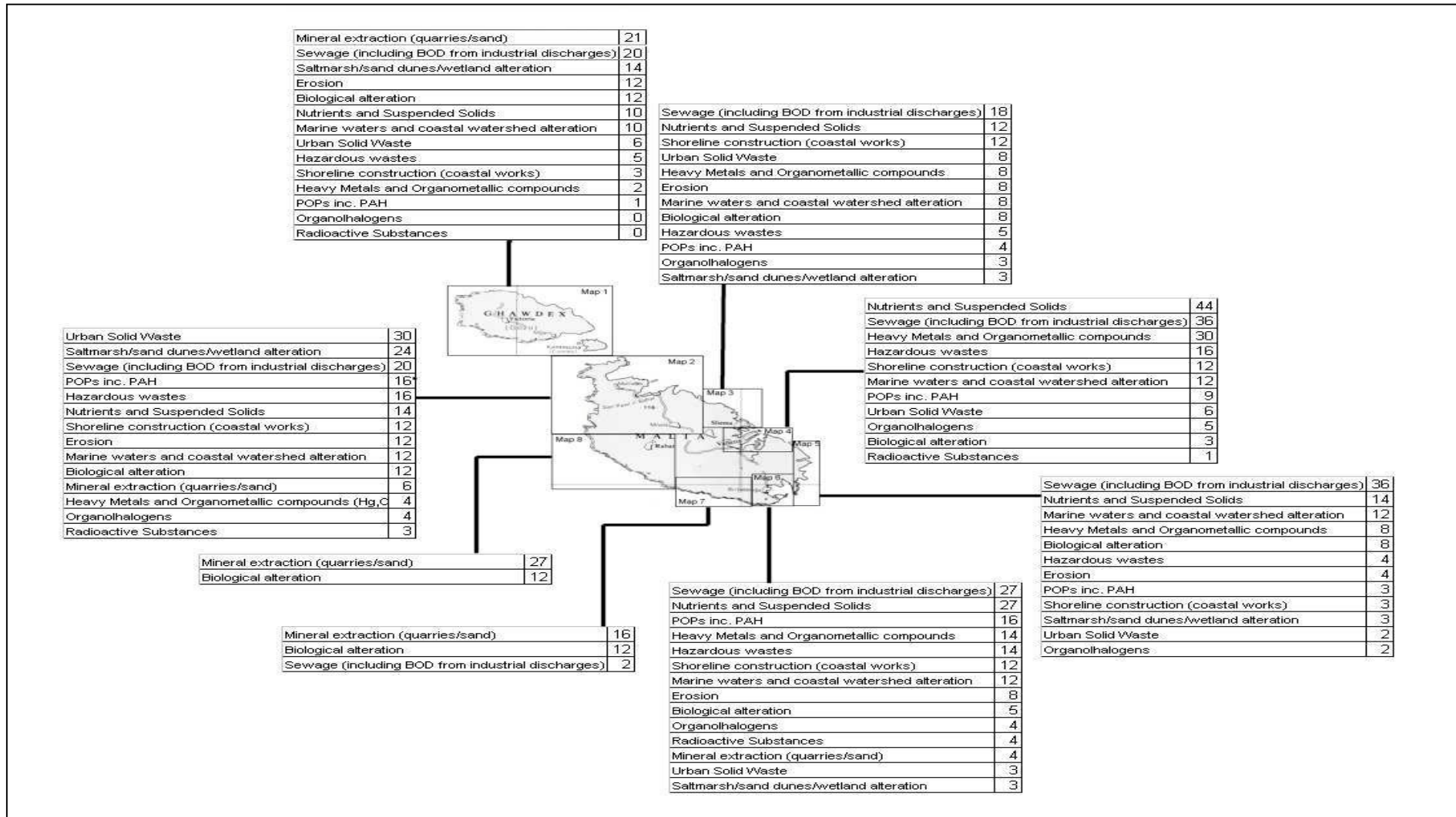


Figure 1 Ranked risk indices for each environmental issue per region.

Table 1 lists the total risk indices for each environmental issue considered for the whole of Malta and Gozo. The relative importance of such issues was further indicated by the computation of the % risk index (i.e. total risk index for a particular issue as a percentage of the total risk index score for all issues).

The absolute values for such individual or combined risk indices have to be treated with proper caution, taking into account the limitations of this approach. Nonetheless, some general and useful observations may be made on these results:

Environmental Issue	total risk index	% risk index
Sewage (including BOD from industrial discharges)	159	17.8
Nutrients and Suspended Solids	121	13.5
Mineral extraction (quarries/sand)	74	8.3
Biological alteration	72	8.1
Heavy Metals and Organometallic compounds	66	7.4
Marine waters and coastal watershed alteration	66	7.4
Hazardous wastes	60	6.7
Urban Solid Waste	55	6.2
Shoreline construction (coastal works)	54	6.0
POPs	49	5.5
Saltmarsh/sand dunes/wetland alteration	47	5.3
Erosion	44	4.9
Organohalogens	18	2.0
Radioactive Substances	8	0.9

Table 10 Total computed risk indices and prioritisation of the various environmental issues for the whole of Malta and Gozo. (Axiak 2004)

Evidently, the discharge of untreated sewage had been identified as the top priority issue which needs to be fully addressed in the National Action Plan. Such releases include those from regular sewer outfalls as well as from sewage overflows from coastal pumping stations. The significance of such impact on all the target levels identified (i.e. public health, resources, natural environment and society/economy) has been judged to be high.

The release of excess nutrients (and to a lesser extent, suspended solids) in the marine environment was currently ranked as the environmental issue with the second order of priority. This impact is evidently not sufficiently understood. Other impacts on coastal and marine areas as arising from the various land-based sources, differ in their degree of significance, with different regions and localities, as clearly show in Figure 1. Evidently, while these impacts need to be addressed in a comprehensive manner, different strategic options will need to be considered and adopted in different areas.

Confirmation of Priority Issues

During the subsequent phase in the compilation of the NAP, a team of experts and of stakeholders was identified by the present consultants and endorsed by the National Coordinator of MEDPOL. The Ministry for Rural Affairs and the Environment was informed of the composition of such a team.

Members of this team were chosen to represent various fields of expertise and relevant sectors of the population including:

- Environmental engineering;
- Private industry and the commercial sector;
- Individual industries such as ship building;
- Representative from the competent authority to deal with solid waste management;
- Representative from the competent authority to deal with liquid waste management;
- Representative from the competent authority to control marine discharges;
- Representative from the competent authority to assess and control coastal development projects;
- Representative from the competent authority to control use of pesticides and agro-chemicals;
- Academia;
- Voluntary organisations.

Members of this team were provided with copies of the NDA (Axiak 2004) and Baseline Budget for Malta (Axiak, 2003). These documents were discussed at length, and while various comments were made, the main findings and results were approved.

A concluding National Seminar was held on the 21st July 2005, with the aim of prioritizing the various relevant environmental issues according to their relevance to the national socio-economic and environmental requirements, taking into consideration the SAP targets and commitments. A total of 17 experts attended this seminar.

During this seminar, these experts and representatives were asked to review the issue/impact matrix whereby impacts were scored by each member using the information provided. Once the individual scoring of impacts was completed for each issue, the group reviewed the individual scorings and through further discussion reached a general consensus on the priorities. Whenever possible, the matrix of issues was identified as per guidelines provided by the MAP Unit. This included the use of scoring system and of guidelines for scoring issues associated with each environmental issue (Annex 1 to UNEP(DEC)/MED/GEF WG 245/3 and to WG 245/2)

Furthermore, for each particular issue and sectoral plan, the group was asked to consider and provide inputs on the following:

- Major AREAS OF CONCERN and major SOURCES of pollutant(s).
- Propose indicative SOLUTIONS to reduce pollutant's emission.
- A rough estimate of indicative COSTS involved.
- Suggest ECONOMIC INSTRUMENTS which may be applicable.
- Identify the current and desirable INSTITUTIONAL REQUIREMENTS to deal with the issue.
- Propose criteria for evaluation of EFFECTIVENESS of measures .

The resultant **National Issues/Impacts Matrix for Malta** is presented in **Table 11**.

ISSUE	IMPACTS				total impact score
	Public Health	Marine Environment	Soc-Econ Loss	Global Environment	
Sewage (including BOD from industrial discharges)	25.5	19.1	23.3	5.1	72.9
Shoreline construction (coastal works)	12.8	19.8	23.2	9.6	65.4
Nutrients and SS including agricultural runoff	18.9	16.4	20.4	5.1	60.7
saltmarsh/sand dunes/wetland alteration	8.0	20.4	22.4	6.8	57.6
Hazardous wastes: spent lub oils	17.5	17.5	16.7	4.7	56.4
Marine waters and coastal watershed alteration	8.8	18.0	20.0	4.4	51.2
Erosion	8.8	14.4	20.0	5.2	48.4
Hazardous wastes: Obsolete chemicals (PCBs etc)	16.7	13.6	13.8	4.0	48.2
Urban Solid Waste	15.3	10.9	17.5	4.4	48.0
Biological alteration	8.0	16.8	16.0	5.2	46.0
Mineral extraction (quarries/sand)	9.6	15.0	15.2	4.0	43.8
POPs (including components of listed pesticides, PCB, dioxins and furans)	16.0	11.5	10.9	4.0	42.4
Heavy Metals and Organometallic compounds (Hg,Cd,Pb,)	11.6	11.5	12.4	4.4	39.8
Hazardous wastes: Batteries and associated chemicals	12.4	10.4	10.9	4.0	37.6
Air pollution	10.4	12.0	10.4	4.0	36.8
Organohalogens (including pesticides)	10.2	8.7	9.5	4.0	32.4
Radioactive Substances	8.0	6.5	8.0	4.0	26.5

Colour coded priority ranking

1st Priority
2nd Priority
3rd Priority
4th Priority

Table 11 National Issues/Impacts Matrix for Malta

At this stage, it will be instructive to compare Tables 10 and 11.

Evidently, the main environmental issue which was ranked as that with the highest overall priority by the team of experts, was the discharge of sewage. This issue was scored as having the highest impact on human health and socio-economic loss, while it was also assessed to be particularly damaging to the marine environment. The same issue had been given top priority ranking by Axiak (2004).

Shoreline construction and the release of nutrients and suspended solids (including runoffs) were ranked as second and third priorities respectively. This ranking also agrees with that of Axiak (2004). It is evident that in a small-island state like Malta with the highest population density in the Mediterranean, shoreline construction and alteration due to various developments (mainly related with tourism and industry), is considered to be of particularly high significance, especially in the release of suspended solids and the likely impact of the marine environment. Specific cases to document such impacts had been detailed in the NDA (Axiak, 2004). Furthermore, inland activities, mainly related with agriculture and animal husbandry was deemed to be particularly significant in leading to impacts on coastal water quality.

Of the issues related with the release of specific chemicals, that concerning spent lubricating oils was judged by the team to be mostly hazardous and of local significance, while the release of heavy metals was judged to be much less significant. The release of radioactive substances was judged to be of the lowest priority both by the team and Axiak (2004).

Chapter III: National Issues

Introduction

Setting Priorities

As has been explained in detail in Chapter II, both during the compilation of the NDA as well as for the purpose of preparing the present NAP, efforts were made to identify the most relevant and significant national issues and to rank them in order of national priority. This will facilitate and make more cost-effective the pollution control programmes which need to be set in place. A team of experts from various sectors of the community and stakeholders contributed to this exercise of priority ranking. Reference to the results of such ranking exercise will be made throughout the following chapter as appropriate.

Pollution Reduction Programmes

Furthermore, many of the Sectoral Plans discussed below, incorporate Pollution Reduction Programmes. The ultimate aim of such programmes is to protect the marine environment from the discharge of contaminants which may be hazardous to human health and marine life, and in doing so, to satisfy Malta's obligations as stipulated by a number of relevant EU Council Directives as well as the LBS Protocol. The quality of the marine environment should be such so as to be free from any hazard or risk to human health, to marine life and its ecosystems functioning, as well as to protect the legitimate use of its resources in a sustainable manner. This general environmental objective would be achieved by the setting of national environmental quality standards (EQS) for specific parameters.

Environmental Quality Standards

An EQS is a concentration limit for a particular parameter which is not to be exceeded in order to achieve the general environmental objective as stated above. It may be expressed either as a **maximum admissible concentration** not to be exceeded at any time, or as an **annual average** (computed on a set number of regularly collected samples). The latter EQS would protect against long-term chronic exposures. Strictly speaking, EQS (and toxicity) for many substances should depend on a number of other environmental parameters of the receiving waters including ambient temperature, salinity and amount of suspended matter. However in setting EQS for marine waters, these factors are taken into account, so that the set EQS would be that which would provide the desired protection even in the worst case scenario of environmental conditions. Nonetheless for the purpose of the present NAP, a set national EQS is to be considered as the MINIMUM standard to be achieved. The Pollution Reduction Programmes aim at progressively eliminating all inputs and discharges of the most hazardous substances (as identified in the EU directives), taking advantage of technological advances in cleaner production techniques and wastewater treatments. Furthermore, the control of discharges should not be relaxed simply because a relevant EQS is being met. This strategic option is being adopted so as to ensure that the NAP will lead to a progressive improvement of the marine environment (rather than simply the prevention of deterioration of its current state).

Most national EQS will apply to the water phase and in a number of cases, also for superficial marine sediments for industrial and non-industrial areas. For non-industrial areas, these sediment quality standards are being set, taking into consideration archived local and Mediterranean background levels as well as toxicological data on the lowest effect level (whenever this is available). For industrial areas, these sediment standards are being set as guidelines to be achieved generally assuming a maximum 75% reduction in pollution levels by 2007.

For some parameters, different EQS have been set to industrial and non-industrial coastal areas. For the purpose of this NAP, the following **industrial areas** have been identified: Grand Harbour, Marsamxett Harbour, Marsaxlokk, Mgarr Harbour as well as officially designated marinas. The rest of the territorial waters of the Maltese Islands are being classified as **non-industrial areas**.

Emission Limit Values for Point Sources of Marine Discharges

The setting of emission limit values (ELV) for the discharge of single substances in effluents is the most commonly used instrument for the control of discharge of dangerous substances in the receiving waters. The basic requirements for the proposed ELV will be to fulfil all obligations of CD 76/464 (and its daughter Directives) and CD 91/271 as well as to assist in the achievement of the SAP-stated targets of reductions for the various classes of contaminants considered.

Unless otherwise stated, *ELV are set on a monthly average basis*. The daily average ELV will be twice that for the monthly average.

In the case of organic chemicals (including pesticides) which are currently banned from use (Pesticide Control Act XI OF 2001), but which are known to be persistent in the marine environment, while EQSs have been set, the proposed ELV will be set at zero (i.e. they should not be detectable with the standard analytical protocols as prescribed by the relevant legislation). The same zero ELV is being set for PCBs. The enforcement of this ELV for direct marine discharges will entail an implementation programme which will be described later on in the present report.

Whenever possible, ELVs are being proposed in a phased approach taking into account the need to achieve the main aims of the NMPS, to satisfy all EU obligations as well as taking into account BATNEEC. In the case of substances identified as PHS by the WFD, the final ELVs to be achieved by 2020 will be zero levels (i.e. they should not be detectable with the standard analytical protocols as prescribed by the relevant legislation). Up till the year 2020, increasingly stringent ELVs are being proposed. These have been determined taking into account any data which may be available on the level of their occurrence in local direct marine discharges and in the marine environment.

Unfortunately, for a number of chemicals, the data which is presently available is not always sufficient. In such cases, ELV are being proposed, assuming a minimal dilution factor of 20 which would be required to achieve the EQS for the respective substance. It is essential that the EPD as the competent authority will periodically update such ELV (for example every 5 years), depending on the availability of data, and provided that compliance with EU directives will be ensured.

In all cases, it will never be permissible to reduce the loads of contaminants in wastewater streams being discharged into the marine environment to the required ELV, through dilution with other wastewater streams (such as cooling waters).

Other components of Pollution Reduction Programmes

Such programmes aim at providing a transparent, and coherent structure which will comprehensibly achieve the stated objective. These programmes will cover the whole territorial waters of Malta, and will be based on both existing local legislation as well as any new legislation which may be required to implement the various provisions being proposed hereunder. The programmes will identify specific strategic targets which are to be achieved as well a set of actions which will need to be implemented to achieve such targets according to a well defined time-table taking into consideration any transition period granted by the Commission in the compliance with the relevant directives.

For all programmes, it is assumed that a Authorization System for granting permits for point source direct marine discharges will be in full operation by 2006.

Each programme considers actions and initiatives which need to be taken in the context of legislation and administrative control, as well as targeted point sources of discharges which have been identified as being mainly responsible for the release of the respective contaminant or class of contaminants. The more direct priority for such programmes is to control direct *marine* discharges from point-sources (as identified and defined above). In addition, and when it is feasible, the programmes will also include actions to control emissions from diffuse sources.

All dated targets are being proposed as indicating reasonable timeframes assuming satisfactory progress in the implementation of these programmes. As such they should be considered only as being indicative at this stage.

Sectoral Plan 1: Sewage Management⁵

Targets of Reduction

- 1- By the year 2000, all point source discharges and emissions from new installations shall have prior authorization by the competent authorities.
- 2- By the year 2010, 50% of discharges of waste water from industrial and urban installations shall be in conformity with national and international regulations.
- 3- By the year 2025, all discharges of waste water from land-based sources and activities shall be in conformity with national and international regulations.

This SP requires the updating and adoption of national regulations on sewage discharges to the sea and harmonization to existing EU Directives, as well as the development of national programmes for the environmentally sound management of sewage including:

- a) construction of sewage networks and wastewater treatment plants;
- b) efficient operation and maintenance of sewage treatment plants
- c) wastewater reuse
- d) treatment at source and segregation of industrial effluents, where feasible.
- e) environmentally sound disposal of sewage sludge (prohibition of its disposal at sea)
- f) separate collection of rain water and municipal wastewater and treatment of first rainwater considered particularly polluting.

Current Situation

The sewerage network in Malta is a combined system which collects both domestic and industrial wastes, as well as some storm water runoff and consists of two main networks (Malta Structure Plan, 1990). The largest of these networks services the southern part of the island and converges at the Marsa Sewage Pumping Station, from where it is pumped either to the submarine sewage outfall at Wied Ghammieg, or to the only (currently) sewage treatment plant, located at Sant Antnin.

The sewerage network in Gozo is similar and most of the sewage is discharged from Ras il-Hobz through a deep submarine outfall. There are another two very small outlets which are to be diverted to this principal discharge point.

Sewage is currently released untreated to the marine environment from these 3 large point sources and exceptionally from other small point sources (individual emergency systems). In addition, during periods of high run off, (during infrequent periods of intense rainfall), and due to the universal practice of operating a combined sewer system, the high hydraulic loading in the system makes the sanitary sewer overflow to surface run off. This presently results in sporadic pollution of water courses with significant contamination of nearshore waters.

Sewage also introduces into the sea components of industrial wastewaters such as heavy metals and POPs

⁵ This sectoral plan covers both domestic sewage as well as industrial waste waters.

Domestic and industrial wastewater discharges cannot be suitably separated or distinguished in Malta. Whilst discharges of 'domestic' sewage are unregulated, there are legal requirements (including consent conditions) placed upon discharges to the sewer from industrial and commercial premises and operations, which are considered to make such discharges similar in type to domestic discharges. These permitting requirements are administered by the Malta Resources Authority in conjunction with the Water Services Corporation.

For the purposes of the NAP, no differentiation between domestic and industrial discharges is made.

In view of the specific waste management practices adopted in Malta; whereby the sewage system caters for nearly all liquid effluents from domestic, institutional, commercial and industrial sources, the release of untreated sewage into the marine environment is also the principal cause of most of the nutrients, suspended solids, heavy metals and organometallic compounds, and of radioactive materials into the marine environment. This will, in the near future also be augmented with agriculturally derived liquid effluents which will be directed to the sewage network according to plans to control surface runoff and ground infiltration from uncovered manure storage sites.

The quantitative and qualitative characteristics of liquid wastes as found in sewers as well as the current environmental impacts on the discharge of untreated sewage into the local coastal environments have been reviewed in the NDA report for Malta (Axiak, 2003b).

The sewerage system is presently being upgraded to satisfy requirements as stipulated by **Council Directive 91/271/EC**. Within the next few years, it is expected that all domestic and industrial wastes will be treated to at least secondary level and that the effluents will be discharged into the marine environment through the existing submarine outfalls equipped with proper diffusers. The requirement as to the third submarine outfall is being considered in the EIA for the plant for Cumnija. A Storm Water Master Plan is also presently being implemented to make, to the fullest extent possible, the efficient use of storm waters, and where this is not practicable to handle in a safe manner the large flow rates caused by infrequent but intense episodes of precipitation being increasingly brought about by the changing climate. The plan also recognises the need to prevent overloading of the sewerage system, which would have negative environmental impacts.

The number of sewage outfalls will be reduced (from the present three) to one in Gozo (Ras il-Hobz) and (from the present three) to two in Malta (Wied Ghammieg and Cumnija).

At present Malta has a single plant at Sant Antnin producing second class water by treating sewage, which has been recently upgraded to treat 17000 m³ of sewage per day. Currently the plant treats approximately 9,000 to 12,000 m³ per day, depending on the demand for treated effluent. These treated waters are used mainly for agriculture (with requirements fluctuating seasonally) and for industry.

Since its upgrading, the Sant Antnin Sewage Treatment Plant (SASTP) has however never operated at more than 50% to 70% of its designed maximum planned output. The main reason for this is the low pumping rates supplying raw sewage from Marsa Pumping station or other stations. A new feeder main is being constructed to remedy the situation.

Furthermore, the relatively high salinity of the sewage produced from the Marsa Sea catchment area, resulting from sea water infiltration into the system, also creates a number of operational problems, and also results in treated effluent with high salinity and thus low agricultural value.

Although Malta has been obliged to treat all its waste water discharges to the marine environment for many years, this obligation has now become stronger following accession to the European Union. As part of its accession negotiations, and with the financial assistance of the Union, Malta will complete the required infrastructure in a phased manner.

The present plans for future sewage and wastewater treatment adopt a centralized approach. One new treatment plant is planned for the southern region in Malta and should be completed by March 2007. This will treat up to 60,000 m³ per day (based on 2020 projections) of raw sewage, and it is most likely that this production will exceed the present industrial and agricultural demands. It is also likely that the design of this plant will be sufficiently advanced so as to produce water of high quality which could be used for unrestricted irrigation. New disinfection techniques alternative to chlorination, are being considered.

Other treatment plants are planned for the north of the main island, at ic-Cumnija (max. production: 7000 m³ per day) and is to be completed by the end of 2006. In the island of Gozo, at Ras il-Hobz, a new treatment plant (max production: 6500 m³ per day) will also be coming into full operation by the end of 2006. These latter two relatively small plants will produce water mainly for agricultural use in their surrounding areas. The Malta North and Malta South sewage treatment infrastructure is expected to be set up and fully operational in a phased manner in compliance with EU Directives, by 2007, special efforts are being made to comply with the timeframes established for compliance. The treatment technology to be adopted for these sewage treatment plants is based on the activated sludge method utilizing extended aeration and final settlement.

As with most types of development, since 1992, these sewage treatment plants will required a formal permit from the MEPA (which regulates the land use and the environmental performance of such installations). This permit is only granted after a thorough and exhaustive environmental impact assessment (the type of installation is specifically listed) and public hearing on the findings has been carried out.

Regulations controlling releases

The 'design' quality of wastewater produced by the plants will be in line with the limit values stipulated in **EC Directive 91/271/EEC**. Furthermore, such treated waste-waters will need to comply with the maximum permissible limit values for marine discharges that may be stipulated by the EPD as the regulator controlling discharges to the marine environment under LN213/2001 transposing the DSD. The regulated parameters for treated waters to be discharged at sea from Ras il-Hobz , and Malta South will include:

BOD ₅	25 mg/l
Suspended Solids	35 mg/l
Ammonia-Nitrogen	2 mg/l

For the plant at Cumnija (Malta North) which will discharge into a sensitive area, the respective limits will be augmented by limits on phosphorous and nitrogen

Total P	2mg/l
Total N	10mg/l

Although the sum total of emissions to the marine environment, which deplete the oxygen content of the receiving waters, cannot be precisely determined this has been assessed as varying from an annual low of 3.2 million Kg BOD to as high as 6 million Kg BOD.

The benchmarks established in the baseline budget established in 2003 indicate the following initial conditions, whilst the SAP targets; when achieved; will result in the following anticipated reductions in the polluting load to the marine environment as follows:

Treatment Plant	Parameter	2003 value	2007 value	% reduction
Wied Ghammieg	Mean BOD5	452 mg/l	25 mg/l	94%
	Suspended Solids	516	35 mg/l	93%
	Ammonia-Nitrogen	64.5	2 mg/l	97%
Cumnija	Mean BOD5	368	25 mg/l	93%
	Suspended Solids	969	35 mg/l	96%
	Ammonia-Nitrogen	80.3	2 mg/l	97%
Ras il-Hobz	Mean BOD5	1954	25 mg/l	98%
	Suspended Solids	452	35 mg/l	92%
	Ammonia-Nitrogen	56.2	2 mg/l	96%

Table 1 Design % reductions for the three sewage treatment plants

The SAWTP plant is producing a significant amount of activated sludge which may be potentially enriched in heavy metals and other contaminants. This sludge is presently being discharged into the marine environment (through the Wied Ghammieg submarine outfall). This essentially means that the major benefit being derived from the SAWTP is that of waste water treatment for reuse, and not of environmental protection from sewage discharges into the marine environment. The setting up of additional sewage treatment plants will necessarily lead to the production of much bigger volumes of activated sludge. Therefore there is urgent need to identify suitable plant, and to invest in treatment facilities capable of adequately dealing with such activated sludge.

Marine discharges of sewage treatment sludge will be discontinued, as they cannot be permitted under environmental norms.

Axiak and Delia (2000) estimated that by 2007, an approximate volume of 31,200m³ of dewatered sewage sludge will be produced per year. WasteServ who are responsible for the implementation of the Solid Waste Management Strategy will be responsible to dispose of this treatment sludge in an environmentally acceptable manner. The possibility of applying treatment sludges as fertilizer and soil improver in agriculture, may not be acceptable. This is mostly due to the concern about the potential increase in nitrate inputs into the aquifers and surface waters, which may result from this application. Furthermore, there is a possibility that the levels of heavy metals and other potential contaminants may be significantly high in the resultant treatment sludge which may restrict its application to agricultural land. A more thorough study on this aspect of sludge production and treatment will need to be made.

In this manner it is anticipated that Malta will fully comply with the LBS target for 2010 to a higher degree in that practically all sewage discharges will be treated to at least secondary degree in line with the limit values stipulated in the EC Directive 91/271/EEC.

In view of the above it is anticipated that the attainment of this target will be reached by 2008 and thereafter.

Sectoral Plan 1(addendum): Sewage Management – National regulations.

Malta has become a member state of the European Union as of May 2004. The treaty of accession specifies the negotiated position relating to Malta's membership, and includes a number of special and transitory arrangements. In this respect Malta has adopted and transposed all of the environmental *acquis*, including the directives, and is applying all regulations and decisions including those related to the effective implementation of the obligations related to the management of sewage, arising from the LBS protocol.

These include:

National Legislation		EU Legislation
L.N. 120 of 2005 - Environment Protection Act (CAP. 435) Urban Waste Water Treatment (Amendment) Regulations, 2005		Directive 91/271 on Urban Waste Water Treatment
L.N. 233 of 2004 - Environment Protection Act, 2001 (Act No. XX of 2001) Protection of Waters against Pollution caused by Nitrates from Agricultural Sources (Amendment) Regulations, 2004		91/676 Protection of waters against Pollution caused by nitrates from agricultural sources
L.N. 194 of 2004 - Environment Protection Act, 2001 (Act. No. XX of 2001) Water Policy Framework Regulations, 2004	Amended by LN192 of 2004 on 23rd April, 2004, came into force on 1st May, 2004 by LN 191 of 2004	2000/60 Water Framework directive
L.N. 192 of 2004 - Environment Protection Act (CAP. 435) Urban Waste Water Treatment (Amendment) Regulations, 2004		91/271 Urban Waste Water Treatment
L.N. 234 of 2002 - Environment Protection Act (Act No. XX of 2001) Integrated Pollution Prevention and Control Regulations, 2002		IPPC directive
LN 139/2002 Malta Resources Authority Act (Act No. XXV of 2002) Sewer Discharge Control Regulations 2002		
L.N. 343 of 2001 - Environment Protection Act (Act No. XX of 2001) Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources Regulations, 2001		91/676 Protection of waters against Pollution caused by nitrates from agricultural sources
L.N. 340 of 2001 - Environment Protection Act (Act No. XX of 2001) Urban Waste Water Treatment Regulations, 2001		91/271 Urban Waste Water Treatment
L.N. 334 of 2001 - Environment Protection Act (Act No. XX of 2001) Malta Resources Authority established as the competent authority in Regulations relating to indirect discharges		
L.N. 227 of 2001 - Environment Protection Act (Act No. XX of 2001) Limit Values and Quality Objectives for Discharges of Certain Dangerous Substances Into the Aquatic Environment Regulations, 2001		86/280/EEC on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC

L.N. 221 of 2001 - Environment Protection Act (Act No. XX of 2001) Limit Values and Quality Objectives for Cadmium Discharges Regulations, 2001		83/513 Limit values and quality objectives for cadmium discharges
L.N. 220 of 2001 - Environment Protection Act (Act No. XX of 2001) Limit Values and Quality Objectives for Mercury Discharges by the Chlor-Alkali Electrolysis Industry Regulations, 2001		82/176 Limit Values and Quality Objectives for Mercury Discharges by the Chlor-alkali Electrolysis Industry Regulations
L.N. 219 of 2001 - Environment Protection Act (Act No. XX of 2001) Limit Values and Quality Objectives for Mercury Discharges by Sectors Other Than the Chlor-Alkali Electrolysis Industry Regulations, 2001		84/156 Limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry
L.N. 218 of 2001 - Environment Protection Act (Act No. XX of 2001) Limit Values and Quality Objectives for Hexachlorocyclohexane Discharges Regulation, 2001		84/491 Limit values and quality objectives for discharges of hexachlorocyclohexane
L.N. 213 of 2001 - Environment Protection Act (Act No. XX of 2001) Pollution Caused by Certain Dangerous Substances Discharged Into the Aquatic Environment Regulations, 2001		76/464 Pollution caused by certain dangerous substances into the aquatic environment
L.N. 212 of 2001 - Environment Protection Act (Act No. XX of 2001) The Sludge (Use in Agriculture) Regulations, 2001		86/278 Protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture

Sectoral Plan 2: Urban Solid Waste⁶

Targets of reduction

This SP requires the implementation of national programmes for the reduction at source and environmentally sound management of urban solid waste, including:

- The establishment by 2005 of environmentally sound systems of collection and disposal of urban solid waste;
- Updating of national plans and programmes on urban solid waste management and harmonisation to existing guidelines (e.g. EU Directives);
- Promotion of urban solid waste reduction, recycle and reuse programmes.

Current Situation

Collection and Disposal of Urban Solid Wastes

The management of wastes is a central issue to sustainable development in Malta. There is increasing concern over increasing volumes and toxicity of waste, and their effect on human health and their impact on the environment in general, including the marine environment. Public awareness about waste generation and management has continued to escalate, and so did the urgency to deal with all the related problems. As a direct response, several studies were conducted and to date more information has been collated. Perhaps the most important and revealing of these were the *"Solid Waste Management Plan for Malta"* published in January 2000 and *"A Solid Waste Management Strategy for the Maltese Islands"* adopted in October 2001.

The several shortcomings in the waste management process in the Maltese Islands, had been previously identified to include:

- a archaic and fragmented legislation;
- b lack of effective incentives to encourage preferred waste management options, rather than landfilling;
- c piecemeal and incidental controls which are not conducive to the sustainable management of waste.

The NDA report for Malta (Axiak, 2004) outlined the existing situation on urban solid waste generation, disposal and management, with particular reference as to how such issues may impact on the quality of our marine environment.

Waste generation

In parallel with increasing development and GDP, municipal solid waste (MSW) generation per capita has steadily increased over the 1997 – 2001 period. In 1998 this was estimated to be 0.39 tonnes/ca/year, while for 2001 this was 0.59 tonnes/ca/year. According to the latest information from WasteServ Malta Ltd. each household in Malta and Gozo generates approximately 1 tonne of waste per year, and this amount is currently increasing by 3% on average every year.

⁶ This section covers both urban solid wastes as well as wastes from industrial installations
National Action Plan for the Protection of the Marine Environment from Land Based Activities.

The management of MSW is aggravated by the great amounts of construction waste being generated through the industry which is a main economic driver in the Islands. During 2004 (until October), a total of 1.6 million tonnes of construction waste were collected and where suitable, is now being placed in quarries, as a restoration method. A further total of 96, 000 tonnes of MSW was collected at the new Zwejra Engineered Waste Facility.

Little data about industrial waste generation is available. Most of the data available is that recorded at the site of disposal. The total industrial solid waste (including construction and demolition (C&D), waste which accounts for over 80% of total) deposited at Malta's main disposal site, Maghtab, amounted to 974,000 tonnes in 2001. This has been increased by almost 35% for 2002 to 1310000 tonnes.

It is perhaps fortunate that Malta has not had a long history of industrialisation, and being without any natural mineral resources, has been spared the worst types of such activities. Industry in Malta consists of electronics, light engineering, textile and pharmaceutical / medical equipment. Thus the wastes arising are not unduly toxic or problematic.

Waste Collection

Private contractors provide collection services under contract to Local Councils who are responsible for the collection of Municipal Solid Waste on a regular basis. This service is funded through special allocations made to the local councils from Government funds, supported through general taxation, and thus at no direct cost to households. This does not serve to encourage minimisation of wastes by households. Industrial waste is collected at the expense of the producer, who thus has a stronger incentive to minimise waste generation and thus costs. The same applies for construction and demolition waste, although the disposal costs are transferred onto the property market. Since 1997 there has been a nominal (subsidised) fee of 0.9 Euro per ton of waste for domestic waste, and of 5.5 Euro per ton of mixed waste, deposited at public waste deposit sites.

Waste Disposal

Until recently, in Malta, there were no properly engineered landfills. With the exception of waste composting, solid waste (as well as some types of sludges and liquid waste) generated in Malta were, until April 2004, disposed in open landfills, which are owned and operated by the State, at Maghtab disposal site on mainland Malta and to a much lesser extent in Il-Qortin site in Gozo. Additionally these sites had minimal operational controls (including staff competencies) and limited facilities for mitigating environmental impacts. At the new Ta' Zwejra Facility, WasteServ has created the necessary infrastructure to operate a facility for Municipal Solid Waste (MSW) with a combined gas recovery system and leachate recirculation. The facility is equipped and lined with a 500mm thick foundation layer, a 2 mm thick geotextile membrane, and a leachate collection and drainage system. In an effort to control emissions and odours, the collected gases from the site will be using the common gas extraction and treatment facility being established in an 'environmental compound' which will service the Maghtab dump rehabilitation project. All the necessary investment has already been secured to ensure an environmentally safe facility in compliance with EU requirements. This site has also been permitted under the IPPC regulations.

New Directions, Plans and Targets.

In Malta, most of the urban solid waste currently reaches the landfills. In an effort to move away from this management option, WasteServ has plans to compost bio-waste as well as recover energy from such waste through digestion. Partly due to EU obligations, Malta now aims to increase the level of recycling and reuse of its urban solid waste and at the same time to reduce the proportions of such waste from reaching the landfills.

The current targets for the reduction of the amount of biodegradable waste currently being landfilled are in line with the EU **CD 99/31/EC**. Such wastes which were estimated to be in the region of 89,000 tonnes in 1995, will need to be reduced to:

66,675 tonnes by 2010
44,450 tonnes by 2013, and
31,115 tonnes by 2020.

Waste Recycling and Reuse

With regard to recycling, in 2001, approximately 30,000 tonnes of solid waste were delivered for composting at the Sant' Antnin Solid Waste Treatment Plant, of which 57% was actually composted (Axiak, *et al.*, 2002), and rest landfilled. The plant has a design capacity of 85,000 tpa. Additional separation and recycling initiatives are carried out by some entities including collection and export for recycling of paper and cardboard, batteries, scrap metals and plastics, but until very recently, there has been no sustained effort at separation at source as yet. An exception to this is the beverage manufacturing industry which operates an efficient deposit-refund scheme for glass bottles. Recovery (reuse) rates of over 90 per cent are recorded on this sort of packaging. There are plans to develop the Sant' Antnin facility to increase and improve the composting process, as well as include energy recovery from biowaste and recycling of various other inert waste streams. This new plant is to receive larger volumes of biodegradable wastes and is thought to be able to accommodate a significant proportion of the biowastes to be redirected away from landfilling.

WasteServ, in association with Local Councils, is establishing 'Bring-in Sites' where the public is able to deliver clean, source-segregated recyclable materials. The Bring-in Sites consist of four containers: blue for plastic, white for paper, brown for glass and black for metal. Materials from these bring-in sites are collected separately and taken to Sant'Antnin Waste Treatment Plant where they are further sorted and then sent for recycling. So far there are 50 bring-in sites around Malta and Gozo. Through EU Structural Funding, WasteServ will be able to establish around 400 bring-in sites around the Maltese Islands.

Civic Amenity Sites or Recycling Centres are supervised facilities (additional to the above) where members of the public can bring and discard a variety of household waste. Unlike bring-in sites, whereby only paper, plastic, metal and glass can be delivered, Civic Amenity Sites cater also for bulky waste such as tyres, refrigerators, electronic products, waste from DIY activities and garden waste.

No food waste can however be disposed of at these sites. The purpose of Civic Amenity Sites is to establish service facilities to optimise the collection of certain types of waste, particularly the hazardous fractions in domestic wastes, and increase the recovery of secondary materials.

These facilities will be manned with a trained workforce and will have particular opening hours where people can enter with their car to dispose of waste in specific containers. The containers used will have specific containment characteristics in order to prevent overflows and spillages. In order to ensure safety on the site, cars entering these facilities will have no contact with the trucks emptying the containers.

Malta will benefit from 4.6 million Euros in structural funds from the EU to finance a waste separation project. The project entitled '*Establishing civic amenity and bring-in sites, a separate household waste collection and an integrated communications strategy*' is aimed at introducing waste separation nation-wide. The project includes the setting up of five centres for bulky waste which will be situated in industrial areas.

Landfilling

The Magtab dump was closed to inert waste in July 2003 and Government then awarded a five-year contract to private contractors who are rehabilitating quarries by filling them up with uncontaminated rubble or construction and demolition material. Between May 2003 and September 2004, 1.6 million tonnes of this type of waste have been placed in various quarries across the island. The quarries currently being used for the disposal of construction material are situated in Mgarr and Qrendi.

A new area of land located at Ghallis (again in the same locality as that of Magtab) has been designated for a new long-term engineered landfill site and waste management facility to accommodate non-hazardous wastes.

There will no longer be any landfills on the island of Gozo. Because of the closure of the Tal-Qorin dump, and until a permanent waste transfer station for Gozo is constructed and is operational, WasteServ Malta Ltd has developed a temporary waste transfer facility near the Qortin Landfill, in Gozo. The project includes sorting and storage bays for the different waste streams and a loading bay for the transportation to Malta for treatment or disposal, of non-inert and non-hazardous waste originating from the islands of Gozo and Comino. This facility functions as a central delivery point, mainly for the non-inert and non-hazardous waste generated in Gozo. The waste constitutes two main streams, that is, those separated fractions collected from the bring-in sites in Gozo, and from other co-operating entities and also for the rest of the mixed municipal solid waste (MSW) that is collected on a daily basis by the refuse collection vehicles (RCVs). To enable the treatment of these waste streams in Malta, the waste needs to be retained separately at the transfer station. Bays allowing for the storage of the recyclable fractions have also been erected. Hazardous waste is received only in approved and safe containers and is transferred to Malta in dedicated vehicles, accompanied by any necessary documentation for their safe handling.

The temporary transfer station at Qortin can also accept other segregated mixed/bulky waste. A substantial part of the floor space has in fact been dedicated to this type of waste. Bays have been formed to separate the different waste streams and to offer minor treatment to decrease the volume of these fractions. Once suitable amounts of waste have been collected in these areas, the waste is loaded onto large vehicles to be shipped to Malta.

Waste Separation

The closure of the former dumpsites at Maghtab, Qortin and Wied Fulija, and the phasing in of new sustainable waste management practices, means that waste separation needs to be introduced at various levels of society. Waste separation at source can enhance the homogeneity of the waste recovered and minimise its level of contamination. Both the technical and economic hurdles for recycling can then be lowered and this increases the recycling viability. Waste streams which are to be separated and directed towards recycling include paper, cardboard, plastics, glass, tyres, batteries, wood and green waste, metal and bulky refuse, and electronic waste .

Managing Hazardous Waste

For the management of hazardous waste a permit from the regulatory authority (MEPA) is required. The waste will be accepted at Sant Antnin Plant according to instructions issued by MEPA. This permit is required to be issued before the waste is taken to the facility. This waste includes: empty oil, paint and chemical tanks; oils; chemicals; thinners and solvents; paint; industrial sludges; material/rags contaminated by chemicals, paint or oils and asbestos.

Dumping at Sea

Approximately 177,000 tonnes of excavation wastes and dredged spoils were disposed offshore in 2001 (Axiak *et al.*, 2002) at a site located at sea off Grand Harbour, at 35°55.1'N, 014°34'E. This site is primarily used for the disposal of clean excavation wastes from major development projects conducted close to the shore and for uncontaminated dredging spoil. In order to deposit waste at this site, a developer and/or operator was obliged to apply for a permit from the Environment Protection Directorate of MEPA.

Incineration

Presently the following streams of solid wastes are incinerated:

- High-risk healthcare wastes from public and private healthcare facilities (St. Luke's Hospital incinerator and Gozo General Hospital incinerator)
- Slaughterhouse wastes from the Malta abattoir (Malta abattoir incinerator)
- Slaughterhouse wastes from the Gozo abattoir (Gozo abattoir incinerator)

The first facility is considered to be non-compliant with the provisions of **Directive 2000/76/EC** on the incineration of waste (transposed into national legislation by L.N. 336/2001) and is to be shut down.

The incinerator at the abattoir in Malta has been replaced temporarily with a mobile plant which complies with EU emission requirements. A new incineration plant is at present in the planning development phase, and if the land use will be allowed the plant will have to comply with the IPPC permitting regime.

A special steering committee has been set up by Government to investigate the feasibility of recovering energy from wastes at the national level. This committee has now finalized its report and this has been submitted to the Government.

Conclusion

The issue of urban solid waste is considered to be one of Malta's top national environmental priorities which need to be addressed with urgency. This issue has in fact received a very high ranking in priority by the team of experts for NAP.

The above account has evidently shown that since 2001, Malta has already made significant progress in the setting up and in the implementation of national programmes for the reduction at source and environmentally sound management of urban solid waste.

Current targets of waste reduction (as outlined above) and current plans for urban solid waste reduction, recycle and reuse programmes ensure that Malta will meet in full its targets for this sectoral plan.

Sectoral Plan 3: Control of Air Pollution

Targets of reduction

This SP requires the implementation of national programmes leading to the control of emissions of carbon dioxide, and other types of gaseous pollutants arising from the combustion of fuels for energy in fixed and mobile sources, including:-

- Measures to control the emission of carbon dioxide
- promotion and incentives for using public transport
- improved traffic management
- promotion of use of lead-free fuel and fuel containing low level aromatic hydrocarbons
- improve inspection and maintenance of vehicles
- promote increased use of natural gas
- promote use of gaseous fuel or other alternative forms of energy in public transport

Current State and Progress

Measures to Implement the UN Framework Convention on Climate Change and the Kyoto Protocol.

Malta ratified the Convention as a non-Annex 1 Party on 17th March 1994, with ratification of the Kyoto Protocol taking place on 11th November 2001. However, prior to these ratifications, Malta had already been instrumental in launching and piloting the concept of climate change throughout international fora, especially through its proposal for a resolution at the United Nations General Assembly in 1988 urging the 'protection of global climate for present and future generations of mankind'. This proposal was adopted as resolution 43/53.

Malta submitted its first **National Communication to the UNFCCC** in 2004. The base year emissions in CO₂ equivalents are just 0.041% of the total EU-25 base year emissions. The average per capita emissions stand at 7 tonnes compared to the EU average of 11 tonnes. However, the specific GHG emissions per unit of gross domestic product (GDP) is 910 tonnes per million Euro of GDP as against the EU average 605 tonnes.

Although under its non-Annex 1 status, Malta does not have any quantified greenhouse gas emission limitations, it fully supports the European Commission in leading Member States towards ambitious reductions in greenhouse gas emissions, thus taking a leading role in the international process on climate change. Also, as a Member State of the European Union, Malta is bound by obligations set out in European Union legislation such as the EU Emissions Trading Scheme (EU ETS) which is a Community-wide greenhouse gas emission allowance trading scheme established by **Directive 2003/87/EC** to cover emissions of greenhouse gases from permitted installations (installations carrying out activities listed in Annex I to the Directive).

Only one sector, that of power generation, (with an installed capacity of around 576 MW) falls within the scope of emissions trading and 6.5 million allowances (equivalent to the 6.5 million tonnes of CO₂, will be allocated between 2005 to 2007, to the two installations operating in this sector.

Other emissions

In line with EU requirements, Malta is now using fuels with a low sulphur content. There has been a remarkable reduction in ambient SO₂ levels. NO_x levels will also be reduced by the installation of low NO_x burners in the power station. Both these measures reduce deposition of acidifying substances.

Promotion and incentives for using public transport

Government has a programme to improve the public transport service, to make it more attractive for users. The aim is both in respect to increase efficiency and frequency of service as well as to increase accessibility to new population centres and to commuters with specific needs such as the aged and those with physical disabilities.

The public transport fleet is gradually being modernised by the introduction of new vehicles with low floors, and with propulsion units complying with EU emission standards.

This improvement requires some increases in bus fares, and these are being introduced gradually. Other measures which encourage commuters to use this service is the increasingly difficult situation in finding parking spaces in town centres, and the efficient enforcement of traffic regulations coupled with meaningful penalties and fines for offences against these regulations.

Government is also to introduce 'Park and Ride' schemes, a first one will serve the Valletta and Floriana area. Commuters will park their vehicle outside the area. There will then be a shuttle service using electric buses to convey people to their destination. The shuttle service fee is incorporated in the parking fee.

Improved traffic management

Management of traffic has been delegated to a new enforcement body (Local Wardens) whose main duties include such tasks. They are equipped with modern data access and transmission equipment to correctly locate owner information and to issue and collect fines.

The introduction of traffic lights has improved traffic management at critical junctions. In addition other passive measures such as greatly improved sign-posting and road marking have made a great improvement in traffic management throughout Malta.

Electronic speed surveillance equipment has also been introduced, and it has served to lower vehicle speeds in critical areas.

Promotion of use of lead-free fuel and fuel containing low level aromatic hydrocarbons

Leaded fuel has been abolished from Malta since 2003. Current fuel supplies comply with EU standards in respect of aromatic content and sulphur levels.

Improve inspection and maintenance of vehicles

Since 2001 all vehicles need to submit to a vehicle inspection test following three years since first registration, and every two years thereafter, before their road licence can be renewed. This test has to be carried out at approved stations, is designed to ensure correct maintenance and thus vehicle road worthiness, as well as to check on compliance with environmental (including noise) emission standards.

Promote increased use of natural gas

Although there is considerable use of liquefied petroleum gas (LPG) there are no plans for the time being to promote the use of natural gas (LNG) at the domestic level.

The Power generation company EneMalta is investigating the utilisation of LNG at the two plants it has (at Marsa and at Delimara), and a preliminary feasibility study has been completed. Two options are possible, either the importation of LNG by gas tanker, or else the connection to the European (or other) Gas network.

The new plant installed by EneMalta will be capable of dual firing using gas or low sulphur fuel in order to secure a reliable supply. The option of gas firing will allow Malta to make the deep reductions in CO₂ emissions which will be required in the future.

Promote use of gaseous fuel or other alternative forms of energy in public transport

There are no plans to introduce alternative fuels in the public transport service, although in the future it may be run on bio-diesel mixtures. Bio-diesel is freely available and carries a small incentive as a reduced cost so as to encourage its use.

Government is however actively promoting the use of electric vehicles by launching a package consisting of a waived registration fee, lower taxation and a part-grant as an aid to purchase of such vehicles.

Sectoral Plan 4: Pollution by Mercury, Cadmium and Lead.

Targets of Reduction

The SAP targets for reduction for these metals are as follows:

- The adoption by 2005 of a maximum permissible level of 0.05 mg/l of mercury in marine discharges.
- The adoption by 2005 of a maximum permissible level of 0.20 mg/l of cadmium in marine discharges.
- The adoption of maximum permissible levels of mercury in various forms of releases from the alkaline chloride electrolysis sector.

The last SAP target is not applicable to Malta since this type of industry is not present.

Current Situation.

The NDA Report for Malta had briefly outlined knowledge of releases and environmental concentrations of mercury, cadmium and lead in Malta.

Present data (though incomplete) suggest that the levels of mercury in most identified point sources of marine discharges are well below the target maximum permissible limit. This could be due to the fact that there are no specific industrial processes using this material.

With respect to cadmium, the present levels in releases from power stations may be marginally exceeding the target maximum permissible level. Similar releases from shipyards have now been reduced to below the permissible level.

With respect to lead, occasional maximum levels may exceed 1 mg/l, although with the abolition of leaded fuels, environmental contamination has been greatly reduced leading to possible elimination of this exceedance.

According to the Baseline Budget for Malta of Emissions/Releases for SAP targeted pollutants for Malta, (Axiak, 2003), the actual national loads of releases of such metals (and of their compounds) into the marine environment are rather low, being in the region of less than one tonne per annum for mercury and cadmium and less than 2 tonnes for lead. The value for lead may be an under-estimate, though it is quite likely that the releases for the metal have since then been drastically reduced with the abolition of leaded fuels.

All releases of mercury, and most releases of cadmium had been identified to arise from the discharge of untreated sewage. Most of such releases are bound to arise from industrial effluents (and to a much lesser extent from wastewaters arising from health-centres, and laboratories), which discharge into sewers. In the case of cadmium, a significant proportion of releases arose from discharges from cooling waters of power stations.

With respect to the priority ranking, this class of marine pollutants was assessed to be rather low in priority by the team of experts..

Regulations controlling releases

As from 2004, regulations in line with the provisions of a number of EU Directives have come into force which control the maximum permissible levels of these metals in marine discharges. **Directive 76/464/EEC**, was transposed by LN213 of 2001. The types of operations that are to be controlled by the permitting regime set up under the directive are given in **CD95/337/EC**. The operations applicable for Malta are sewage discharges, discharges from power stations and discharges from shipyards.

A number of Daughter Directives give emission limit values for discharge in the aquatic environment as well as quality objectives for the concentration of those substances in water, sediments and also biota. The Daughter Directives relevant to this NAP, as transposed in Maltese legislation, are the following:

- LN219/2001 on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry regulations, 2001.
- LN220/2001 on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry regulations, 2001.
- LN221/2001 on limit values and quality objectives for cadmium discharges regulations, 2001.

Furthermore, the Water Framework Directive (**CD2000/60/EC**) which is the result of a complete restructuring process concerning European Water Policy, has been transposed by LN194/2004

In Malta, the transposed **IPPC directive** came into force on 1st May, 2004 by LN 188 of 2004, and was later amended by LN230 of 2004 on 30th April, 2004. Existing installations have to be permitted by October 2007 and have to conform with relevant BAT, while the Directive enters into force immediately for new installations. In Malta there are 19 existing IPPC installations, and of the three operators falling under the permitting system of **CD76/464/EEC** at least three are IPPC sites.

Wastewater discharges from industrial plants into public sewers are controlled by the Sewer Discharge Control Regulations (Legal Notice 139 of 2002). Schedules A and B of these regulations are in line with Lists 1 and 2 provided for by **CD 76/464/EEC**. For chemicals included in Schedule A, their level in the discharged waste-waters should not be significantly higher than upstream. This means in practice that no releases of such chemicals are allowable. Schedule A include mercury and cadmium (for the metals and their compounds). In the case of lead, the upper permissible value has been set at 1mg/l (total lead). For Cadmium, Malta has negotiated a derogation under CD 76/464/EEC, lasting until 2007

For the purpose of the present SP and taking into consideration the local context and practicalities, it is being proposed that the following pollution control programme will be adopted.

National environmental quality standards for lead will be formalized by law, (as has been carried out for mercury and cadmium in the marine environment (water and sediments)) as well as proposed emission limit values for such contaminants, in specific areas as indicated below:

Proposed environmental quality standards for mercury, cadmium and lead

	<i>EQS in water</i>		<i>EQS in sediments</i>	
	<i>Non-industrial Areas</i>		<i>Non-industrial Areas</i>	<i>Industrial Areas</i>
Mercury	0.3 ug/l dissolved	total	0.2 mg/kgDW by 2007.	no increase up to 2007; 1 mg/kgDW by 2010
Cadmium	2.5 ug/l dissolved	total	0.6 mg/kgDW by 2007.	no increase up to 2007; 3 mg/kgDW by 2010
Lead	0.01 mg/l dissolved	total	30 mg/kgDW	no increase up to 2007; 100 mg/kgDW by 2010

*Limit as Annual Mean Concentration, unless indicated otherwise.
Concentrations for metals expressed as total concentration in mg per kilogram of dry weight of superficial sediment.*

Table 2 Proposed environmental quality standards for mercury, cadmium and lead

Proposed Emission limit Values for Direct Marine Discharges

Mercury	Below 0.05 mg/l by 2007. Not traceable by 2020.
Cadmium	0.3 mg/l by 2007; 0.2 mg/l by 2010. Not traceable by 2020
Lead	Below 0.5 mg/l up till 2007, 0.1 mg/l thereafter

Table 3 Proposed Emission limit Values for Direct Marine Discharges

Solutions and Pollution Reduction Programmes.

The present Sectoral Plan proposes the following specific action programme to ensure that the above targets are met in a phased approach as follows:

By 2007, to ensure that EQS (total dissolved metal) in water for cadmium and lead are complied with in **all areas**.

Up to 2007, to ensure no increase in present levels in sediments and biota in **all areas**.

By 2007 to ensure that all point marine discharges do not exceed ELV for cadmium taking into account existing derogations.

By 2007, to achieve or maintain EQS in sediments of 0.2 mg/kgDW for mercury and 0.6 mg/kgDW for cadmium in **non-industrial areas**.

By 2010, to limit the release of these metals and their compounds, to the lowest possible level so as to reach the most stringent level of EQS for both metals.

By 2010, to reduce metal loads in sediments in **industrial areas** by 75% so as to reach EQS in sediments of 1 mg/kgDW for mercury and 3 mg/kgDW for cadmium, in such areas.

Activities:

Legislative

By 2005, if need be, publishing and enforcing new Legal Notices to enable the application of proposed EQS and ELV.

General

To allow by formal permitting, the direct marine discharges from point-sources, only if they comply with the set ELV.

Sewage Outfalls

To increase compliance monitoring for these metals in such discharges

To prohibit the discharge of any sludge produced by the treatment plants for urban wastewaters into the marine environment, by 2007.

Other Point-Sources Direct Marine Discharges

To assist in the implementation of pollution limiting programmes by both power stations.

To monitor the progress of such programmes and of investments to achieve final targets of emission.

To assist the ship-repairing sector in the implementation of pollution limiting programmes so as to control dock activities and practices and to prevent any release of these metals or their compounds in dockwaters.

To monitor the progress of such programmes and of investments to achieve final targets of emission.

To prohibit the discharge of any sludge produced by any industrial wastewater treatment plants into the marine environment. and to ensure proper disposal of such sludge.

Diffuse And Other Sources Of Discharges which are less easy to identify

By 2005, to enforcement a ban on the use of compounds of these metals as pesticides and biocides.

By 2007, to have a full inventory on the importation or shipments and use of compounds of these metals.

By 2007, to encourage the adoption of best-practice methodologies in order to reduce the release of such contaminants, and voluntary pollution reduction programmes.

Sectoral Plan 5: Reduction and Control of pollution by specific Organohalogen compounds.

Targets of Reduction

This SP requires the formulation of national programmes for the reduction and control of these SAP-targeted organohalogens. Such programmes are to ensure that:

- a) the common measures for such targeted compounds as adopted by the contracting parties will be adopted by 2005.
- b) there is a reduction in the use of short-chained chlorinated paraffins in accordance with the LBS Protocol;
- c) there is regulation by 2005 of releases or organochlorines by paper and paper pulp industries
- d) a reduction and control of the manufacture of PBDE and PBBs
- e) a reduction and control of manufacture and use of certain pesticides such as lindane, 2,4-D and 2,5-T herbicides and tri- tetra- and penta- chlorophenols

By 2010, to reduce by 50% (and more) such releases from industrial installations and By 2025 (and even before) to ensure that point sources from the industrial sector will be in conformity with all provisions of the LBS Protocol and other agreed international and national provisions.

Current Situation.

The following substances have been targeted within the SAP by UNEP and need to be covered in the present SP:

- Halogenated aliphatic hydrocarbons such as chlorinated solvents: trichloroethane, dichloroethane and trichloromethane.
- Halogenated aromatic hydrocarbons such as chlorobenzenes, polychlorinated naphtalens, polybrominated diphenyl ethers and polybrominated biphenyls.
- Chlorinated phenolic compounds.
- Organohalogen pesticides.

Malta has a long history of regulating the use of persistent organohalogens, including the pesticides listed as falling within the scope of the SP. As a specificity of Malta, there are no industries active in the paper pulp, or the manufacture (or use) of PBDE and PBBs.

Pesticides such as lindane, 2,4-D and 2,5-T herbicides and tri- tetra- and penta- chlorophenols, have been prohibited from importation for more than 20 years, and are not used in Malta.

This class of potential marine pollutants received one of the lowest rankings in priority both by Axiak (2004) as well as the team of experts.

Sources and Levels.

Axiak (2004) summarized the state of knowledge about the level of usage and of releases of this class of compounds.

Over the period 1997 to 2001 almost 600,000 kg per year of organohalogen-based formulations were imported in Malta. Of the SAP-targeted organohalogen industrial solvents, over 55,000 kg were imported per year. Of this amount, 97% was due to perchloroethylene. Next in ranking was dichloromethane. Trichloroethylene was also imported in relatively substantial quantities at the rate of 12,543 kg/year. In Malta, it is used as a degreaser and industrial solvent.

For hexachlorocyclohexane, the annual importation rate of 256 kg was estimated on the basis of a single importation figure of 1280 kg in 1998 of an item with HS code number: 2903519000 which is shown as "other 123456-hexachlorocyclohexane NES". Hexachlorocyclohexane (as mixed isomers) has been banned from use as a pesticide as from 1993.

With respect to the use of other targeted organohalogen pesticides of this category, endosulfan, and pentachlorophenol are banned. Hexachlorobutadiene which is an industrial by-product, but may also be used as an organohalogen pesticide has not been imported in Malta over the period 1997-2001. Methoxychlor is permitted for use as a pesticide, but has not actually been imported over this period. Alachlor, which may be used as a herbicide, is apparently not banned, but again has not been imported.

As regards brominated flame retardants, though no polybrominated diphenyl ethers have been imported, they may be present as additives in certain components found in imported TV sets and computer monitors. The International Telecommunication Union (2002), as quoted by UNEP (2002), has estimated that the atmospheric emissions of brominated flame retardants in Malta may amount to a total of 1.86 tonnes from TV sets in service for ten years (estimated number of sets: 218,000) and to 0.47 tonnes from computer monitors in service for ten years (estimated number of monitors: 90,000).

With respect to other organohalogen compounds, Axiak (2004) reported that significant amounts of their formulations are being imported at an estimated rate exceeding 500,000 kg per year. Disinfectants based on halogenated compounds make up almost 27% of the imported organohalogenes. Trichlorotrifluoroethanes and dichloromethane make up 11% and 10% of all the listed items, respectively.

Very limited information is available on the levels of this class of compounds in the local environment. Axiak (2004), reported on two short-term monitoring programmes of specific point sources of discharges, including sewage wastewaters from the three main outfalls, from the two local power stations, from Malta Shipyards (dock waters) and from an oil tanker reception facility (Malta Shipyards). Results for the more recent monitoring showed that most samples did not have any of the organohalogenes tested for, (i.e. below detection limit), except for one sample from Wied Ghammieq outfall which carried 0.001 mg/l of trichloroethylene. In 2000, Axiak and Delia (2000) reported on another limited monitoring programme for point source marine discharges. Of the organohalogenes analyzed for, no traces were found of hexachlorocyclohexane pentachlorophenol hexachlorobutadiene 1,2 dichloroethane trichlorobenzene carbon tetrachloride or trichloroethylene. On the other hand, perchloroethylene and chloroform were found, though at low levels, in practically all of the samples. Perchloroethylene levels ranged from 0.1 to 0.3 ug/l. Chloroform was detected at higher levels, ranging from 0.3 to 2.3 ug/l, the highest levels being found in sewage outfalls. Malta has negotiated a transitional arrangement under the DSD with the EU in respect of chloroform, perchloroethylene, and trichloroethylene.

In the compilation of the Baseline Budget of releases for Malta (Axiak 2003) only perchloroethylene exceeded the value of 2 tonnes per annum. Trichloroethylene and chloroform exhibited release loads of less than 50 kg per year. By far, most of these annual loads of such organohalogens are being released by the public sewers. It is not possible at present to identify the main industrial sectors which are responsible for their release though it is quite likely that these are small and micro-industrial factories within the mechanical and industrial engineering sector.

As already indicated above, targets c, d and e are not applicable to Malta.

The following marine pollution control and reduction programme has been designed so as to ensure that the following SAP-targeted reductions of annual releases of these organohalogens into the marine environment from local land-based sources, will be fully complied with as follows:

By 2010, to reduce by 50% (and more) such releases from industrial installations and
By 2025 (and even before) to ensure that point sources from the industrial sector will be in conformity with all provisions of the LBS Protocol and other agreed international and national provisions.

Environmental Quality Standards

For the purpose of the present SP, a number of environmental quality standards (EQS) and emission limit values ELV in point sources direct marine discharges for a number of organohalogen compounds are being identified.

The Water Framework Directive obliges Member States to phase out discharges of priority hazardous substances (PHS). The EU commission is presently drafting a proposal to this effect, setting EQS for PHS whose emissions are to be phased out 20 years from the adoption of this (eventual) directive. Although Art. 16(7) of the WFD requires the Commission to present a proposal, it is now believed that that it is more cost effective and proportionate to allow MS to include such control in their 'Programme Of Measures'

Therefore, pending progress in this area, and the setting of EU EQS for PHS, strategic targets which is transitory to the more stringent standards being proposed by the EU commission are being proposed for this SP.

The limits set for the national EQS are being expressed as annual mean concentrations as analysed for a minimum number of samples (to be decided upon by Environmental Protection Directorate, EPD) which would be regularly collected through a single year. Analysis will be carried out as per prescribed and standard analytical techniques to be determined by EPD.

For the purpose of this SP, the various EQS are to be applicable only to non-industrial areas.

Environmental Quality Standards for selected Organohalogens to be applicable to non-industrial areas (for further details, see text)

	<i>Proposed EQS in water</i>	<i>Proposed EQS in sediments</i>
Parathion	not traceable	
Dichlorvos	0.04 ug/l	
Hexachlorocyclohexane (Lindane)	0.02 ug/l	no increase
1,2 Dichloroethane	10 ug/l	
Trichloroethylene TRI	10 ug/l	
Carbon Tetrachloride	12 ug/l	
Pentachlorophenol PCP	2 ug/l	no increase
Hexachlorobutadiene	0.1 ug/l	no increase
Trichlorobenzene TCB	0.4 ug/l	no increase
Chloroform (Trichloromethane)	12 ug/l	
Perchloroethylene (Tetrachloroethylene)	10 ug/l	
Atrazine	2 ug/l (including Simazine)	
Benzene	30 ug/l	
Chlorfenvinphos	not traceable	
Endosulfan	0.003 ug/l	
Naphthalene	5 ug/l	
Simazine	2 ug/l (including Atrazine)	
Trifluralin	0.1 ug/l	

Table 4 Environmental Quality Standards for selected Organohalogens to be applicable to non-industrial areas.

The targets set for this SP with respect to these EQS will be as follows:

- By 2006, to ensure that EQS in water for all chemicals will be complied with.

Emission Limit Values for Direct Marine Discharges

The basic requirement for the proposed ELV will be to fulfil all obligations of **CD 76/464** (and its daughter Directives) and **CD 91/271** as well as the SAP-targeted reductions *ELV are set on a monthly average basis*. The daily average ELV will be twice that for the monthly average.

Emission Limit Values for selected Organohalogenes to be applicable direct marine point discharges (for further details, see text)

	<i>ELV</i>
Parathion	not traceable
Dichlorvos	0.8 ug/l (guideline)
Hexachlorocyclohexane (Lindane)	3 mg/l by 2006; 2 mg/l by 2007. Not traceable by 2020.
1,2 Dichloroethane	0.1 mg/l by 2006; 0.05mg/l by 2007; Not traceable by 2020.
Trichloroethylene TRI	0.05mg/l by 2007; Not traceable by 2020.
Carbon Tetrachloride	1.5 mg/l by 2006; 0.75mg/l by 2007; Not traceable by 2020.
Pentachlorophenol PCP	1 mg/l by 2006; Not traceable by 2007.
Hexachlorobutadiene	1.5 mg/l by 2006; 0.75mg/l by 2007; Not traceable by 2020.
Trichlorobenzene TCB	1.5 mg/l by 2006; 0.75mg/l by 2007; Not traceable by 2020.
Chloroform (Trichloromethane)	0.5mg/l by 2007; Not traceable by 2020.
Perchloroethylene (Tetrachloroethylene)	0.05mg/l by 2007; Not traceable by 2020.
Alachlor	not traceable
Anthracene	not traceable
Atrazine	not traceable
Benzene	(guideline) 0.6mg/l
Chlorfenvinphos	not traceable
Chlorpyrifos	not traceable
Endosulfan	not traceable

Table 5 Emission Limit Values for selected Organohalogenes to be applicable to direct marine point discharges.

The targets set for this SP with respect to these ELV will be as follows:

By 2007, to reduce inputs by at least 50% so that all marine discharges will not exceed the more stringent ELV.

Wherever no ELV had been set for SAP-targeted organohalogenes, to ensure that by 2007, such ELV will have been identified.

By 2020, all point marine discharges will carry no traceable amounts of any of these substances.

Solutions and Pollution Reduction Programmes.

Legislative

By 2005, if need be, publishing and enforcing new Legal Notices to enable the application of proposed EQS and ELV.

By 2007, to introduce new legislation to ban or control the use of 1-2 Dichloroethane as a pesticide/biocide and as a metal degreaser.

By 2007, to introduce legislation banning the use of Alachlor, Chlorpyrifos, Isoproturon as pesticides.

General

To authorize the direct marine discharges from all industrial point-sources, only if they comply with the set ELV (in a phased approach as indicate above).

For those pesticides, which are currently banned from use, to ensure full enforcement of such regulations.

By 2006, to make an inventory of the importation and use of all relevant chemicals (which are currently not banned from importation).

By 2006, to have in place an action programme in order to collect and dispose of all PCB wastes in a safe and environmentally sound manner. This programme will include the decontamination of equipment and containers. All deposits and storage depots for PCB will need to be registered by the EPD

By 2007, to encourage the reduction of importation of carbon tetrachloride, hexachlorobutadiene (if imported at all) and trichlorobenzene as solvents by at least 50%. To encourage the substitution of such chemicals as solvents in various industries, by other safer compounds.

By 2006, to formulate and implement an action plan aimed at reducing the importation and use of all three chemicals by local industry and SMEs by at least 50%. To encourage the substitution of such chemicals as solvents in various industries, by other safer compounds.

By 2006, to formulate and implement an action plan addressed at land-based plants

Sewage Outfalls

To increase compliance monitoring for these chemicals in such discharges

By 2007, to prohibit the discharge of any sludge produced by the treatment plants for urban wastewaters into the marine environment.

To increase compliance monitoring for these chemicals, particularly in sewer outfalls, and discharges from both power stations.

To authorize the direct marine discharges from all industrial point-sources, only if they comply with the set ELV (in a phased approach as indicate above).

Other Point-Sources Direct Marine Discharges

To prohibit the discharge of any sludge produced by any industrial wastewater treatment plants into the marine environment and to ensure proper disposal of such sludge.

To assist the power stations to identify ways in which any discharges of these chemicals will be reduced to acceptable limits as per ELV set. This could require some form of wastewater treatment.

To assist the ship-repair industry in the implementation of an action plan to reduce the use of these chemicals as organic solvents and metal degreasers, as well as to improve current work practices in docks (such as the collection of small wastewater and effluent streams arising from ship-hull treatment and similar operations in dedicated drainage systems rather than in the dock itself) and the proper management of dockwaters.

By 2007, to require periodic authorization of dock-operations in ship/yacht –repairing sector. This authorization will require compliance with an agreed code of practice and the application of Best Environmental Practice. It will aim at minimizing the release of these (and other) chemicals into the marine environment.

Diffuse and other sources of organohalogen pesticides which are difficult to identify

These sources arise mostly within the agricultural sector and the domestic/industrial pest control companies.

To encourage the safe use of permitted listed pesticides.

To encourage and facilitate environmental auditing in the identified sector.

By 2010, if compliance monitoring will show that the set EQS in water are not being met, to require an authorization for the use and application of all listed pesticides by all users. This authorization will require compliance with an agreed code of practice and the application of Best Environmental Practice.

Sectoral Plan 6: Management of waste lubricating oils, hazardous chemicals and obsolete chemicals stockpiles

Targets of reduction

The SP requires the formulation of a plan for:-

- the good management of waste lubricating oils,
- the good management of hazardous chemicals and obsolete chemicals stockpiles.

The following marine pollution control and reduction programme has been designed so as to ensure that the following SAP-targeted reductions of annual releases of these organohalogens into the marine environment from local land-based sources, will be fully complied with as follows:

By 2010, to reduce by 50% (and more) such releases from industrial installations and
By 2025 (and even before) to ensure that point sources from industrial sector will be in conformity with all provisions of the LBS Protocol and other agreed international and national provisions.

Current Situation.

The following types of hazardous wastes have been targeted within the SAP by UNEP and which need to be covered in the present SP:

- Obsolete Chemicals that include stocks of banned organochlorine and out-of-date chemicals
- Used Lubricating and Other Oils
- Batteries

Of the hazardous wastes, spent lubricating oils received the highest priority ranking by the team of experts.

The NDA for Malta briefly reviewed the current local situation with respect to these contaminants. It noted that data on hazardous waste generation is very fragmentary and needs to be improved. Estimates of the quantities of several categories of hazardous wastes that were generated during the year 2000, are as follows:

- 2,500 tonnes of oils of marine origin
- 2,500 tonnes of waste oils from land based sources
- 4,500 tonnes of other types of hazardous wastes
- 500 tonnes of clinical wastes

In 2001 approximately 1,964 tonnes of hazardous wastes that were delivered to the Maghtab waste deposit site were recorded through the introduction of a voluntary hazardous waste consignment note procedure. In addition, approximately 4,500 tonnes of lead acid batteries were exported.

A survey undertaken in 2001 for 120 industrial establishments revealed that they generated a total of 26,534 tonnes of waste in the year 2000. These include 300 tonnes of chemicals, 1512 tonnes of sludges and 1557 tonnes of spent oils. Almost 13,000 tonnes of the solid wastes from these establishments fell under a category designated as "other", since such waste did not fall under any of the other categories used. 97.09% of the waste fraction 'other' was considered by generators to be hazardous and that 86.08% of this fraction was generated by shipyards and boat related activities.

During the period 1998-2001, industrial waste generators continued to be responsible for disposing of their waste. Transfer to recovery or disposal sites was achieved by means of own transport facilities or private waste contractors.

As from August 2000, the EPD introduced a voluntary system whereby the transfer of hazardous waste from the site of generation to the site of disposal, storage or recovery is covered by a hazardous waste consignment note. This system became obligatory following the adoption of L.N. 337 Waste Management (Permit and Control) Regulations in 2001.

Oils

With respect to lubricating oils, it has been estimated that approximately 4.5 million litres of lubricating oils were imported in 1999. It is generally assumed that one third of this volume is consumed during use; therefore 3 million litres required collection and treatment. Of this amount only about 1,440,200 litres were collected, some of this even by non authorised collectors. The remaining oils may have found their way into the environment. Some waste mineral oils are collected and stored at various locations awaiting treatment at a privately owned oil-water separation facility and filtration plant producing various grades of fuel oils. Some untreated waste mineral oils were also burned in unauthorised facilities as a substitute fuel. Some quantities were also illegally discharged into the sewerage system.

Oily wastes (mainly contaminated sand and iron oxide scale) generated from the storage tanks of Enemalta and other oil storage facilities were landfilled. Approximately 395 tonnes of such wastes were notified to the EPD during 2001 through the consignment note system.

It is estimated that approximately 4,500 tonnes of cooking oils and fats are used every year in the Maltese Islands. These materials end up becoming waste at some stage or other. It is estimated that approximately 2,000 tonnes of spent oils and fats are generated every year by the catering industry. A private establishment collects small quantities of spent edible oils and fats; these are refined and directed into manufacture of biodiesel. This company handles about 160 tonnes of this waste category per annum. The rest of this waste category was either landfilled or discharged into the sewerage system.

Other Hazardous wastes

For 2000, approximately 20,000 tonnes of blasting grit was generated at the Malta Shipyards. This waste may be considered to be hazardous, since it contains significant amounts of organotins residues from antifouling paint systems. Some of this waste was delivered to Maghtab; the rest was dumped at sea.

Work of this type including the removal and application of organo-tin antifouling paints has been discontinued in line with EU directives.

Almost 34 tonnes of spent batteries were collected over a period of 4 years (1998-2001). The collection efficiency for these types of hazardous wastes, has still to be assessed, locally.

Stockpiling of Hazardous Wastes

Considerable quantities of wastes, particularly hazardous wastes, are stockpiled. These include wastes such as:

- Asbestos wastes
- Waste oils
- PCB-containing oils and equipment
- Other hazardous wastes

Asbestos wastes were generated primarily during ship repair and refurbishment, dismantling and removal operations at several industrial and non-industrial sites. These wastes were stockpiled on the premises of two public corporations, and 'waste brokers'. It is envisaged that large quantities of these waste will be exported for environmentally sound disposal.

Waste lubricating and mineral oils are collected and stored awaiting the processing at a privately owned oil-water separation and filtration plant.

During 2001 the EPD conducted a registration exercise of PCB-containing sources. This exercise revealed the presence of approximately 94,000 litres of PCB oils, or oils contaminated with PCBs. They are located at two different locations. These oils are either in drums or in equipment that is still in use or which has been decommissioned. It is envisaged that these wastes will be exported for environmentally sound treatment and disposal.

Other hazardous wastes, including wastes such as waste chemicals, expired pharmaceuticals and heavy metal containing sludges will be exported for proper treatment and disposal. Except for PCBs, no proper inventory is being kept for the stockpiling of spent chemicals.

Reuse

The main type of hazardous wastes which is being re-used are spent oils. Spent lubricating and other mineral oils are being burned as fuel, while some edible oils and fats are used to manufacture biodiesel.

Current Management Practices.

The disposal of waste lubricating oils is regulated by LN 337 of 2001 and LN161 of 2002 (Waste Management (Waste Oils) regulations 2002, which have the purpose of regulating the collection and disposal of waste oils without causing harm to humans or the environment.

There is one plant in Malta which accepts waste lubricating oils and processes them into fuels for use in heating and marine propulsion equipment. The collection system for such waste oils still needs to be much expanded to adequately cater for arisings of this hazardous waste. The Eco-contribution Act of 2004 enacted in August of 2004, and regulations made thereunder stipulates a levy on all virgin lubricating oils with the purpose of funding collection and recycling schemes for this material.

The Malta Maritime Authority is one entity which has a formal collection system for waste oils at marinas.

The management of hazardous chemicals is still being developed. Because of the limited facilities (and the relatively small arisings), there are no environmentally acceptable methods for disposal of hazardous wastes. Most waste of this type, originating from industry, is exported under the legal regimen required by the EU regulations and international conventions.

WasteServ are in the process of designing and having permitted a hazardous waste cell as part of a new engineered waste disposal facility to be set up.

All movements of hazardous waste are regulated by permits issued by MEPA so that its tractability can be ensured at all times.

Baseline Budget of Releases

The figure below shows graphically the estimated annual Baseline Budget of releases for Malta (Axiak 2003) for petroleum hydrocarbons and other oils (including greases) for the various industrial sectors considered. The total amounts of releases per annum range from approximately 171 to 650 tonnes.

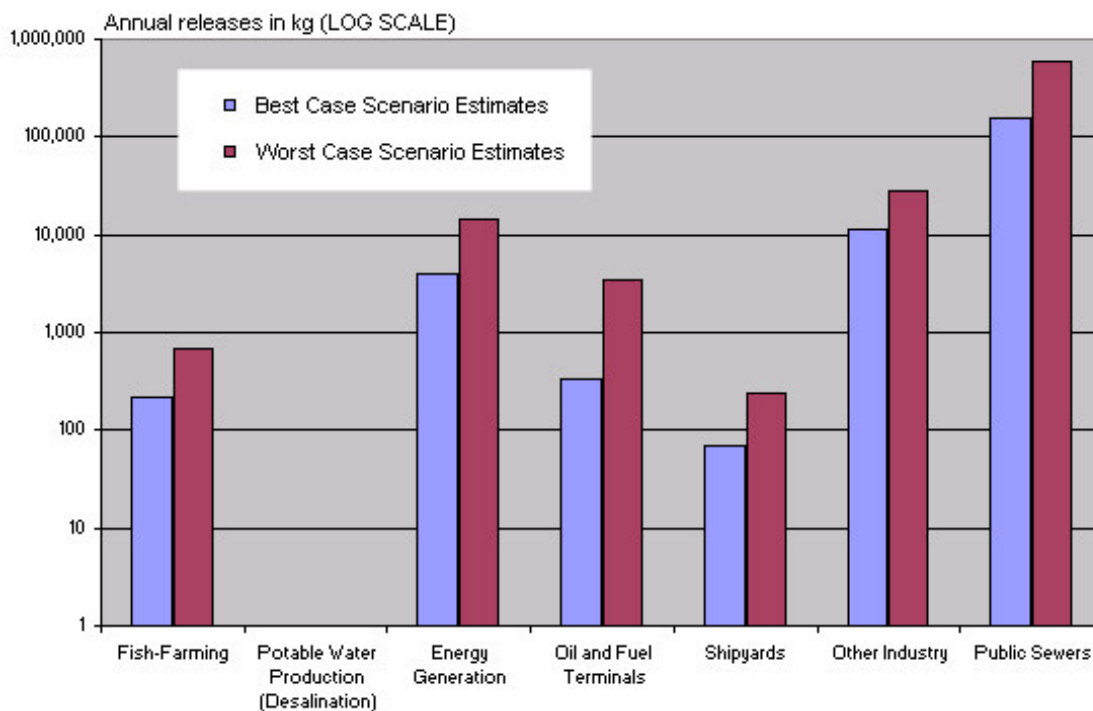


Figure 2 Annual releases of petroleum hydrocarbons and other oils in Kg

Environmental Quality Standards for Oils

For the purpose of the present SP, the following environmental quality standards (EQS) are being identified.

Environmental Quality Standards for petroleum hydrocarbons.

<i>Proposed EQS in water</i>		<i>Proposed EQS in sediments</i>	
<i>For Non-industrial Areas</i>	<i>For Industrial Areas</i>	<i>For Non-industrial Areas</i>	<i>For Industrial Areas</i>
not traceable;	by 2006: 1mg/l, by 2007: 0.25 mg/l, by 2010: 0.1 mg/l	4 mg Chrysene Equivalent/kgDW;	no increase by 2007; 30 mg Chrysene Equivalent/kgDW thereafter

Table 6 Environmental Quality Standards for petroleum hydrocarbons

The proposed EQS in sediments have been set on the basis of archived data generated using UV spectrofluorimetry.

The targets set for this SP with respect to these EQS will be as follows:

By 2007, to reduce the release of this class of chemicals by 50% in direct marine discharges in industrial areas so as to comply with stricter EQS in water.

By 2010 to further reduce the release of this class of chemicals by 50% in direct marine discharges in industrial areas so as to comply with stricter EQS in water and in sediments.

To ensure that all discharges will comply with any new EQS as applicable to individual polyaromatic hydrocarbons, as these are identified by the European Commission.

Emission Limit Values for Oils in Direct Marine Discharges

In all cases, it will never be permissible to reduce the loads of contaminants in wastewater streams being discharged into the marine environment to the required ELV, through dilution with other wastewater streams (such as cooling waters).

Emission Limit Value for petroleum hydrocarbons to be applicable for direct marine point discharges.

<i>ELV</i>
5 mg/l on a 24-hour mean basis or as determined by EPD for intermittent discharges.

Table 7 Emission Limit Value for petroleum hydrocarbons.

The targets set for this SP with respect to these ELV will be as follows:

To ensure that all point marine discharges do not exceed the ELV set. At the discretion of EPD, this ELV may be substituted by the application of a site-specific dilution factor and a mixing zone, to achieve set EQS in water and sediments.

To ensure that all discharges will comply with any new ELV as applicable to individual polyaromatic hydrocarbons, as these are identified by the European Commission.

Obsolete Chemicals

Given of the lack of primary industry, there has never been any industrial processes involving the manufacture of chemicals in Malta. Industry is essentially a user of chemicals, in the creation of consumer goods through simple mixing processes. The creation of obsolete chemicals in Malta thus occurs in small quantities, and when this has taken place, the resulting wastes have generally been disposed of locally at one of the previously existing landfills.

Since the closure of these landfills and the strict application of the EU directives related to the management of wastes, especially hazardous wastes, such wastes are now being stored pending export in conformity with EU and international requirements, to other countries where they can be managed by treatment or disposal in an environmentally correct manner.

Presently there are around two tonnes of expired pesticides, (the definitive amounts however still need to be officially ascertained) apart from the previously mentioned PCB contaminated oils.

Another stockpile related to 'obsolete hazardous chemicals' concerns stockpiles of used batteries which have accumulated over many years through the voluntary return and collection schemes which were in place since 1993. Batteries are imported in conformity with LN158 of 2002, which transposes CD91/157/EEC, and in conformity with EU requirements it is intended to strengthen the collection efforts for such batteries and accumulators. To improve collection efficiencies all batteries carry a small additional charge (eco-contribution) of Lm0.025 per battery of less than 35 grams, and of Lm0.70 if exceeding 35 grams.

Presently over 36000kg of batteries are awaiting shipment by WasteServ since no private enterprise has shown interest in this business. The export of accumulators is however entirely in the hands of private firms who regularly export such accumulators

Solutions and Pollution Reduction Programme.

Legislative

As soon as practically possible, to publish and enforce new Legal Notices to enable the application of proposed EQS and ELV for oils.

General

By 2006, to prepare and adopt a national programme for the collection, recycling and safe disposal of used oils and other obsolete and stockpiled chemicals.

By 2006, to authorize the direct marine discharges from all point-sources, only if they comply with the set ELV for oils.

To integrate within the present Pollution Control Programme any specific polyaromatic hydrocarbons, which are known to occur in wastewaters released by oil and fuel terminals, which have been identified under the WFD as Priority Hazardous Substances, and for which the Commission will stipulate ELV and EQS in the future.

Sewage Outfalls

To increase compliance monitoring for these chemicals, particularly in sewer outfalls.

Oil/Fuel Handling and Storing Facilities

In consultation with other relevant bodies (such as the Malta Maritime Authority, and the Malta Resources Authority) to advise and encourage identified facilities as to their requirements for water treatment for complying with the set ELV.

To encourage and facilitate environmental auditing in the identified sector.

Diffuse And Other Sources Which Are Difficult To Identify

By 2010, if compliance monitoring will show that the set EQS in water are not being met, to require an authorization for the use, storage and handling of used oil and/ or fuel oils. This authorization will require compliance with an agreed code of practice and the application of Best Environmental Practice.

Sectoral Plan 7: Establishing a system of previous authorization for works causing physical alterations of the natural state of coastline or degradation of coastal habitats.

Current Status

The SPs are to include reports on a number of activities including on the establishment of administrative and legislative structures which would enable previous authorization for works causing physical alterations of the natural state of coastline or degradation of coastal habitats.

In a densely populated island state like Malta, urban development is bound to have a profound impact on the environment, and especially on the coastal zone which may lead to various forms of physical alteration and destruction of ecologically important habitats. The NDA report for Malta has briefly reviewed the main causes and areas of concern related to habitat alteration and degradation of the local coastal zone. Physical changes of the coastline had been attributed to a number of major coastal engineering works related directly or indirectly to tourism, beach erosion, beach reclamation, the development of coastal protective works, and mineral extraction (mainly refer to hardstone and softstone quarries). Furthermore, the local coastal areas host a number of ecologically important habitats other than wetlands and saline marshes. These include cliffs, sand dunes as well as underwater caves. All are being endangered by intensive coastal developments.

The NDA also identified major coastal watershed alterations, mainly due to:

- a) coastal and inland road developments;
- b) development of coastal and inland quarries;
- c) urban development along the coastline and especially within valleys and along their high ridges;
- d) coastal landscaping especially related to major tourist and hotel development;
- e) sandy beach reclamation projects;
- f) industrial developments and relocation of industrial activities and sites including chemical/waste depots; fuel/gas installations, etc.
- g) developments of agricultural land and activities of farms and of animal husbandry sites.

At the national level, the NDA ranked mineral extraction as the third most important environmental issue which need to be addressed, while watershed and coastline alterations were also ranked of moderate significance. The team of experts ranked coastline alteration as the second highest issue of priority, based mainly on impact on the quality of the marine environment and on the subsequent losses of a socio-economic nature. Gozo and the south-westerly coastline of Malta were assessed to be particularly vulnerable to shoreline alteration.

Authorization Mechanisms for Coastline Alteration

The competent authority to control coastal development projects and to issue authorization and permits for such projects is the Malta Environment and Planning Authority. This authority emerged in 2002, when the Environment Protection Department merged with the Planning Authority, forming the Malta Environment and Planning Authority (MEPA) within the then Ministry of Home Affairs and the Environment, now Ministry of Rural Affairs and the Environment.

The Planning Authority was established under the Development Planning Act of 1992 for the promotion of proper land development and the control of such development in accordance with policies, plans and conditions approved by Government. The Authority was responsible for the preparation of the Structure Plan and supplementary documents, the conduct of consultations with the public and private sector, as well as the publication of an official manual containing a list of the approved policies, plans, conditions and procedures.

The Structure Plan for the Maltese Islands is a strategic long term plan for the islands covering the twenty year period to 2010⁷. Although it is concerned with all aspects of social, economic and physical structure, its basic concern is with land: what should be developed, where, when and how. It is essentially a co-ordinating plan that seeks to accommodate, manage and integrate the development requirements of all Government departments and agencies, the private sector and the community as a whole.

The territory of the Maltese Islands is also divided into seven Local Plan areas and the MEPA is in the process of preparing these various Local Plans that will guide and control future development and the use of land. The Structure Plan includes a wide range of policies designed to channel, encourage and co-ordinate social and economic development. These include:

1. initiatives to encourage social and economic development
2. provisions to ensure that land and infrastructure can accommodate the required growth, and
3. measures to improve the management of financial and land resources.

The 1990 Structure Plan, and the Temporary Provisions Scheme before that, sought to contain the urban sprawl of the 1980s and concentrate development in and around existing urban areas. Outside these areas, development is only allowed for uses that, due to their nature, cause bad neighbourliness and should be located away from built-up areas (e.g. quarries, farms, obnoxious industries, etc.)

To fulfil its mandate the Planning Directorate carries out surveys of those matters affecting the character and quality of the environment. Adequate opportunities are guaranteed by law for individuals and organizations to make representations to the Authority when the latter is reviewing the Structure Plan.

Furthermore, the Planning Directorate may consider it necessary to prepare more detailed proposals than those embodied in the Structure Plan, so as to ensure the proper and effective management of development. Such plans, which are called subsidiary plans, can be subject plans, local plans and action plans, as the case may be.

With respect to coastal developments, there is a significant number of policies with the Structure Plan which stipulate the type of allowable developments and the constraints within

⁷ The MEPA is currently reviewing the Structure Plan. It is expected that the new plan will be finalised in the near future.

which such developments may be approved. Each development requires authorization by MEPA and such authorization is subjected to an environmental impact assessment through an established procedure.

The legal requirement for EIAs in Malta was established through the Structure Plan for the Maltese Islands, 1990, which identified specific project types as well as plans to be subject to environmental assessment. The need for EIA was also established for projects that may affect protected areas.

A draft set of procedures was published for public consultation in 1993 and adopted that same year. The following year, the Planning Authority issued a Policy and Design Guidance on EIA in Malta, which explains in simpler terminology the procedures applicable to the process in Malta and outlines the roles and responsibilities of the various stakeholders. This guidance remained in active use up to September 2001 when the new EIA Regulations (LN 204 of 2001) were published and hence superseded the former guidance. The EIA procedures of 1993 and the Policy and Design Guidance of 1994 were, at the time, already largely compliant with EU directive 85/337/EEC.

The new EIA Regulations fully transpose the EU directive (85/337/EEC as amended by directive 97/11/EC). They are also in conformance with the requirements of the ESPOO Convention on Environmental Impact Assessment in a Transboundary Context and the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. The Regulations also provide a robust process for the assessment of effects on the environment as required by other EU directives, such as the Wild Birds Directive (79/409/EC), the Habitats Directive (92/43/EEC) and the IPPC and Seveso II Directives (96/61/EC and 96/82/EEC).

In some regards the Regulations also exceed the requirements of the EU directive. This includes the Schedule of projects requiring EIA in which, due to the small size of the Maltese Islands, thresholds establishing the requirement for EIA are more stringent than those established by the directive (e.g. animal husbandry farms, quarries, thermal power stations, etc.). The requirements for public participation in the Regulations are also more advanced than those required by the directive. In fact, this has been one of the most interesting aspects of the new Regulations, since for the first time, the public are being given the opportunity to truly participate in the process, rather than simply being consulted at the last moment. The new Regulations provide for consultation with the public before the terms of reference are set, including also the possibility of holding public scoping meetings. The public can also be consulted throughout the formulation of the statement and formal public consultation phases take place once the draft environmental statement is submitted. The Regulations also provide for a greater role for Local Councils, who now are consulted before the terms of reference are established and also receive all drafts of the plan. The Local Councils can, in turn, run their public consultation processes.

A further innovation included in the Regulations is that related to the Registration of EIA Consultants. This entire section, which has not yet been brought into force, provides for the establishment of a Registration Board answerable to the Minister, that will establish and run a Registration Scheme for consultants, the framework for which is already spelt out in the Regulations.

The major changes from the 1994 procedures that have been brought about by the new Regulations include:

- o Clarification of the roles and responsibilities of the various stakeholders
- o Establishment of competent authorities
- o Establishment of the roles of local councils
- o Clarification of the roles of the applicants and consultants
- o Emphasis on public participation rather than simply consultation
- o Extension of public participation starting from the scoping stage rather than just after the review stage
- o Establishment of a registration process and register of consultants
- o Greater accountability and transparency
- o Greater accessibility of the public to the entire process
- o Clearer time frames for the various steps of the process
- o Emphasis on monitoring and follow-up
- o Requirement for justification for decisions taken including the publication of reasons for approvals or refusals
- o Increased public notification of the various stages of the EIA process (through formal notices in the official Gazette, adverts in newspapers and site notices)

The EIA process in Malta has always been open and transparent, with public consultation an integral part of it. Nonetheless, improvements were felt to be necessary following years of experience. These have been effectively introduced in the new Regulations, however a period of time has to be allowed until the various new ideas are implemented and improved upon through practice.

Since 2000, all relevant information on EIAs in Malta may be accessed through internet on <http://www.mepa.org.mt/eia-malta>.

The above account amply shows that Malta has all the administrative and legal structures in place and in operation, in order to ensure that this environmental issue will be successfully addressed, even for the purpose of the NAP.

Sectoral Plan 8: Phasing out of nine pesticides

Targets of reduction

The common measures by Contracting Parties are to include the phasing out of the use of such pesticides as well as to organize the collection and safe disposal of any existing quantities.

Current State

All the nine SAP-targeted pesticides (DDT aldrin, dieldrin, endrin, chlordane, heptachlor, mirex, toxaphane, and hexachlorobenzene) are banned from being used in Malta, in most cases since 1993. Hexachlorobenzene was banned from use as a pesticide as from 1998. There is no information on the possible existence of any deposits or stockpiles of obsolete and banned pesticides in Malta. The table below summarizes the local legislative regimes controlling them.

	LOCAL CONTROLS	Limit Values as set in LOCAL LEGISLATION	Quality Objectives as set in LOCAL LEGISLATION Conc in SW	Quality Objectives as set in LOCAL LEGISLATION sediments/biota	Maximum Discharge Conc LN 139 of 2002 (Sewage Discharge Regulations Schedule A -no significant increase than upstream	Pesticides (Control)Act. Cap. 192
Aldrin	LN 227 of 2001	2 to 10 ug/l	30 ng/l	no increase	Not traceable	Banned for use as a pesticide (Schedule 1)
Dieldrin	LN 227 of 2001	2 to 10 ug/l	30 ng/l	no increase	Not traceable	banned for use as a pesticide (Schedule 1)
Endrin	LN 227 of 2001	2 to 10 ug/l	30 ng/l	no increase	Not traceable	banned for use as a pesticide (Schedule 1)
DDT(Dichlorodiphenyl trichloroethane)	LN 227 of 2001	0.2 mg/l M 0.4 mg/l D as from Jan 03	25 ug/l as from Jan 03	no increase	Not traceable	banned for use as a pesticide (Schedule 1)
Hexachlorobenzene HCB	LN 227 of 2001	1 mg/l to 3mg/l (M ?) as from January 2003	0.03 ug/l Jan 03	no increase		Banned for use as a pesticide (Schedule 1)
Heptachlor						banned for use as a pesticide (Schedule 1)
Toxaphene (Campheclor)						banned for use as a pesticide (Schedule 1)
Chlordane						banned for use as a pesticide (Schedule 1)

Table 8 Legislation controlling some pesticides

Furthermore environmental monitoring carried out by Axiak (2000, 2003c) and quoted in the NDA provide evidence that the levels of such pesticides in seawater, sediments and selected direct marine discharges (especially marine sewage outfalls, and selected industrial plants), are generally below detection limits.

These targets are to be reached through the following programme of pollution control:

Environmental Quality Standards

The following environmental quality standards for these pesticides in marine waters and in coastal sediments, are being proposed for non-industrial areas.

	<i>Proposed EQS in water¹</i>	<i>Proposed EQS in sediments¹</i>
	<i>For Non-industrial Areas</i>	<i>For Non-industrial Areas</i>
DDT(Dichlorodiphenyl trichloroethane)	0.025 ug/l (all isomers) 0.01 ug/l for para-para-DDT	no increase
Hexachlorobenzene HCB	0.03 ug/l	no increase
Heptachlor	not traceable	
Toxaphene (Campheclor)	not traceable	
Chlordane	not traceable	
Aldrin	0.01 ug/l	no increase
Dieldrin	0.01 ug/l	no increase
Endrin	0.005 ug/l	no increase
Isodrin	0.005 ug/l	no increase
Notes		

1 = Limit as Annual Mean Concentration,

Table 9 Environmental quality standards for some pesticides.

Emission Limit Values

In the case of hexachlorobenzene, point sources of marine discharges will not be authorized by 2007 unless they have levels below 0.5 mg/l. This ELV is to be reduced to nil (not traceable) by 2020. For the rest of these pesticides, the ELV would be set to nil. Therefore, the quantitative targets with respect to ELV for these pesticides will be as follows:

- To ensure that all point marine discharges do not exceed the ELV set for each chemical. (For a number of chemicals this would be set at no traceable level)
- By 2007, to reduce inputs so that all marine discharges will not exceed the ELV.
- By 2020, all point marine discharges will carry no traceable amounts of any of these substances.

Solutions and Pollution Reduction Programmes.

Legislative

- By 2006, if need be, publishing and enforcing new Legal Notices to enable the application of proposed EQS and ELV.

General

- To authorize the direct marine discharges from all industrial point-sources, only if they comply with the set ELV.
- For those pesticides, which are currently banned from use, to ensure full enforcement of such regulations.

Sewage Outfalls

- To increase compliance monitoring for these chemicals in such discharges
- By 2007, to prohibit the discharge of any sludge produced by the treatment plants for urban waste-waters into the marine environment.

Sectoral Plan 9: Prohibiting the manufacture, trade and new uses of PCBs.

Targets

- To make inventory of use. To advice on substitutes. Make pilot programmes aimed at safe disposal, and decontamination of containers .
- To prohibit manufacture, trade and new use
- To collect and dispose all PCB waste in a safe and environmentally sound manner
- To phase out inputs. To prohibit manufacture, trade to all existing uses.

Current Status

PCBs have never been manufactured in Malta. Furthermore, they are no longer used in electrical appliances.

The NDA for Malta reported that environmental levels are generally below detection limit though some occasional traces in sewers have been reported.

It is quite probable that the disposal of equipment with PCB containing oils is the main source of PCBs in Malta as in other Mediterranean countries. The use of PCBs has been banned as a result of the transposition of the relevant EU Directives in national legislation. In November 2001, EPD had issued a public call for registration of PCB-containing equipment or oils. Subsequently 2 registrations from PCB holders were made, one relating to 6 kg of unused power factor capacitors containing PCBs oils, and another relating to a stockpile of 93545 litres of oils containing PCBs. These latter oils are either in drums or in equipment that is still in use or which has been decommissioned. It is envisaged that these wastes will be exported for environmentally sound treatment and disposal.

As already indicated, Malta has already achieved a number of these targets. Furthermore in order to monitor compliance with controls, it is being proposed that the EQS for PCBs in marine sediments in non-industrial areas should be set at below detection limit (nil). Furthermore, for administrative purposes, no marine point sources of discharges will be authorized if they have detectable levels of PCBs by 2010.

EPD is to continue and improve the compilation of PCB deposits in Malta with an effort to facilitate their safe disposal and decontamination of containers and storage site/s (if applicable).

Chapter IV Development of a Programme of Support Elements

Introduction

The effective and transparent implementation of the reduction plans set out in the previous chapter are dependant on the provision of a number supporting elements.

Institutional setup

The NAP is intended to be a comprehensive management and policy framework to assist Government, industry and all other stake-holders in prioritising their sustainability development requirements, and in mobilizing political and financial support. As such, it is our opinion that the SPs and the NAPs are to be integrated within existing or planned policy structures, foremost amongst these, the **National Strategy for Sustainable Development**.

It is being proposed that a NAP Management Team will be set up within the National Council for Sustainable Development (NCSD). This Team will be responsible to the NCSD and the Cabinet Sub-Committee on the Environment. It will be responsible to monitor the implementation of the NAP and to coordinate the various activities and actions which need to be undertaken by the various identified entities within the framework of the NAP.

This Team will be hosted by MEPA as the lead agency in charge for the implementation of this NAP.

No new institutional set-up is envisaged for the implementation of obligations under this NAP, since they can generally be achieved within existing arrangements made for achieving compliance with EU obligations. The identified components within the existing arrangements are set out below.

The lead agency

As lead agency the MEPA will be required to assist the NAP Management Team in its co-ordination role, and to verify the implementation of the various Pollution Reduction Programmes, and to periodically review and modify these plans. An added responsibility of the lead agency will be to periodically report to the Contracting Parties on the implementation of the reduction obligations under the protocol.

The lead agency will also be required to keep a regular dialogue with all stakeholders including the various agencies implementing the reduction programmes and the general public.

The designated lead agency (MEPA) will thus need to allocate moderate investments principally from its human resource component (both in number as well as in training) in order to satisfy this role under the LBS protocol.

Existing staff may also need retraining to enable a better implementation of the principles of integrated coastal areas management, and in a more sensitive application and implementation of the present planning guidelines established in the authority.

Other institutions.

The correct implementation of the action plans set out in the previous chapter will also require a parallel identification of resources from within other institutions in those areas where their input will be required.

The table below, summarizing the requirements is for indicative purposes only.

Agency or Department	Skills	Number
MEPA	Scientists	2
	Planners	1
	Environment inspectors	3
	Secretarial	1
WasteServ Malta Ltd.,	Scientist / engineers/	1
	Supervisors	2
	Inspectors	5
Water Services Corporation	Scientist / Engineer	1
	Supervisors	1
	Inspectors	5
Agriculture Department	Scientists	1

Table 13 Indicative human resource allocations for NAP implementation

Publicity and educational campaign

Many of the institutions involved in the implementation of the reduction action plans, or in their verification, already have their respective publicity and educational campaigns. Apart from the lead agency exerting a minor role in providing and disseminating relevant information to the other institutions and the general public, on the protocol and its implementation, no major resource requirements are envisaged for enhancing the existing campaigns to highlight the obligations and benefits deriving from the LBS protocol.

The lead agency will enhance its comprehensive website to disseminate information on the protocol as well as to inform on the reductions in emission of pollutants to the Mediterranean sea.

Reduction plan monitoring and verification.

The targets set out in the reduction action plans will be monitored and verified by the lead agency (MEPA). Basic monitoring infrastructure and systems are already in place. The different institutions may have to slightly upgrade monitoring, data capture and elaboration procedures in order to satisfy the specific reporting obligations under the protocol.

Improvements in baseline data.

The National Baseline Budget had been compiled on the basis of already existing studies and data. The studies conducted for the purposes of the preparation of this NDA have indicated the margins of confidence in this data, which in some instances has been quite wide.

The quality of the data used can also be improved to refine the identification and quantification of discharges into the Marine environment.

The lead agency (MEPA) needs to improve upon the accuracy of the data upon which the Baseline Budget is based, and upon which the reduction programmes and targets are based.

Whilst the human resources have been accounted for in the table above, the various sampling, monitoring and analytical activities have been estimated separately below.

Miscellaneous Supporting Actions

Support Action	Lead Agency	Collaborating agency/s	Time frame	Estimated total costs
Improve baseline data through monitoring	MEPA	MRA, WSC, Power generating company, Shipyards	2006 to 2010	Lm10000 / year
Setting up or upgrading laboratory facilities / services	various	various	2006 to 2010	Lm10,000 per year
Training of staff	Various	Various	2006 to 2006	Lm10,000
Publicity and educational campaign	MEPA	MRA, WSC, Drainage Dept, Wasteserve, Health Dept. MMA, AFM, Agriculture Dept. Fisheries Dept. etc.	2006 to 2010	Lm10,000 over 5 years
Verification Monitoring and reporting	MEPA		2006 to 2010	Lm20,000 Per year

Table 14 Indicative allocation for monitoring

These budgetary estimates are for indicative purposes only and in large part are already covered by the general improvements and upgrading taking place in connection with the full implementation of the EU acquis. The costs directly and unequivocally needed in addition to those required for EU compliance are deemed to be minimal but have not been quantified.

General Supporting Actions

Summary of Action plan related to sewage management.

(incorporating the reduction of nutrients, suspended solids, heavy metals, lubricating oils, radionuclides,)

Implementation related to Sewage Management				
Action	Who	Time frame	Compliance indicator	Investment cost
WW Plants Development permit	MEPA	By 2006	Permits issued	
WW Plants Environment permit	MEPA	By 2006	Permit issued	
WW Plants Construction Gozo Malta North Malta South	WSC	Phased between 2006 to 2007	Plants commissioned	Lm33 million
Training of WW operating staff	WSC	2007	Certification of personnel	
Implementation of relevant aspects of Manure management plan	Agriculture dept. and WSC	2007 and beyond	100% compliance of targeted animal (pig) rearing units	To be determined by end 2006
Performance monitoring of WWTPs	WSC	2007 and beyond on a daily bases		
Compliance monitoring of WWTPs	MEPA	2007 and beyond	ELV's <i>complied with on the bases of monthly average.</i> The maximum daily average ELV will be twice that for the monthly average. 100% compliance by 2010	
Extend sewage network to serve all premises	WSC	End 2007	100% connectivity	
Improve reliability of coastal pumping stations	WSC	By end 2010	95% reduction in discharges to the sea due to station failure	

Improve HR capacity and maintenance procedures to avoid unplanned shutdowns of coastal pumping stations	WSC	ongoing	95% reduction in discharges to the sea due to station failure	
Enforce removal of illegal rainwater connections to the sewer	WSC	ongoing	50% by 2008 100% compliance by 2010	
Ensure that medical diagnostic and treatment radionuclides discharged into sewer are below IAEA guidelines	WSC Radiation Protection Board of OHSA	ongoing	100% compliance	
Improve data collection and reporting	WSC MEPA	2006 and beyond	95% data capture in required fields	
verification monitoring of industrial discharges into the sewer	WSC MEPA	2007 and beyond	95 to 100% compliance by all industrial sectors 100% compliance by SAP targeted industry	
Find disposal solution for WWT sludges	Wasteser v WSC Drainage Department	By 2007	100% compliance	
Reduce infiltration of saline waters into sewer	WSC Drainage dept.	By 2007	95% reduction in infiltration	
Identification of micro-sources of Mercury, Cadmium and lead discharges into the sewers	Drainage dept. WSC MEPA	2006 and beyond	100% identification and control	

Enact legislation on environmental quality standards for Hg, Cd, Pb		2006		
Put in place permitting system for direct marine discharges	MEPA	2006	95% compliance by end 2006 100% compliance by end 2007	
Provide advice to power plants and shipyards	Cleaner Production Centre MEPA		2006	
Elimination of oil discharges from shore installations	MMA AFM MEPA		ongoing	
Implementation of manure management and application rules	Agriculture dept. MEPA WasteService	2006	All farms applying code of good agricultural practices.	
Assistance to farmers for pre-treatment of farm waste	Agriculture dept. MEPA	2006 and beyond	All farms have pretreatment by 2010	

Summary of Action plan related to solid and hazardous wastes management.

(incorporating the reduction of litter, nutrients, heavy metals, lubricating oils,)

Implementation related to Solid Wastes Management				
Action	Who	Time frame	Compliance indicator	Investment cost
Find disposal solution for WWT sludges	WasteService WSC Drainage Department	By 2007	100% compliance	
Accelerate implementation and upgrading of solid wastes management strategy	WasteService MEPA	2005 and beyond		
Develop data collection on waste generation esp. hazardous wastes	WasteService MEPA	2005 and beyond	90% coverage of industry by 2006 100% coverage by 2007	
Enhance collection of used batteries	WasteService MEPA		75% capture by 2006 95% collection efficiency by 2010	
Develop data collection on obsolete pesticides & Organohalogenes	WasteService Agriculture dept. MEPA		Collect all obsolete pesticides and Organohalogenes by 2008	
Strengthen educational campaign of wastes management	WasteService Cleaner Production Centre		2005 and beyond	Lm25000
Encourage separate collection of waste fractions	WasteService		ongoing	5.5 million euro

Promotion and extension of eco-taxes	WasteService	Batteries, oil, aluminum cans, glass bottles already in place		
Prohibit importation for use of persistent organohalogen pesticides	MEPA Agriculture dept. WasteService		Ongoing	
Encourage best practices in industry through eco-certification	MEPA MSA Cleaner Production Centre		Ongoing	
Set in place formal system for collection of waste oils	WasteService MEPA Private enterprise		By 2006	
Assistance to shipyards to treat oil / water residues	Cleaner Technology Centre	2006 and beyond	To comply with 0.5mg/l oil in water limit by 2010	
Encourage the export of hazardous waste (inc. batteries) according to international and EU law	WasteService MEPA	ongoing	30% by 2007 60% by 2010	
Extension of local warden service to prevent beach littering	Local Councils MEPA Warden service	2006 and beyond	50% reduction in beach litter by 2007 95% by 2010	

Summary of Action plan related to physical alterations of the natural state of the coastline.

(incorporating physical alteration of natural state of coastline, the reduction of litter, sediment transport,)

Implementation related to physical alterations the coastline				
Action	Who	Time frame	Compliance indicator	Investment cost
Increased sensitivity to granting of development on shoreline / at sea	MEPA MMA	Ongoing	Number of permits issued on coast.	
Apply recommendations deriving from CAMP project	MEPA			
Accelerate policy implementation to ensure public access to shoreline to extent possible	MEPA	ongoing	% coastline not yet accessible	
Prepare and implement management plans for coastal wetlands	NGO's MEPA Local Councils	By 2007	All protected or scheduled wetlands have a management programme	
Develop and implement technical and management methods to reduce impacts of dust and sediment runoff from coastal quarries	MEPA Quarry owners	By 2010	Management plans prepared and implemented in 50% of coastal quarries	
Study impact of non permeable roads across valleys and bays	MEPA	By 2010	Prepared study and designs.	
Encourage re-forestation	Agriculture dept. MEPA NGO's	ongoing	Area afforested	
Encourage rebuilding and maintenance of rubble walls	Agriculture dept. MEPA NGO's	ongoing	Length of rubble walls in good condition	

Summary of Action plan related to the control of air pollution.

Implementation of controls on Air Pollution				
Action	Who	Time frame	Compliance indicator	Investment cost
Improve emission inspections on road vehicles	ADT	2006 and beyond	95% of vehicles compliant by 2010	
Implement the EU Emissions trading scheme for CO ₂	MEPA Power Stations	2005 and beyond	No exceedance of agreed emission allowances	
Monitor sulphur content of fuels	MRA MEPA	2005 and beyond		
Control emissions from Landfills	WasteService	2007 and beyond		9 million euro
Control of Nox emissions from power plants	Power stations	2008	Emissions within limits	900,000 euro

Chapter V Economic Valuation of Coastal and Marine Systems and Net Benefit Analysis

Investment Portfolio.

The guidelines provided to harmonize the preparation of the country NAP's suggest that the mobilisation of financial resources is a major consideration in the prioritisation of environmental projects required to comply with the LBS protocol implementation.

This may indeed be so, however the guidelines also make reference to the possibility of such prioritisation being based on additional more specific and sharply defined factors. For Malta this has, to a large extent, been the case. The political commitments made in connection with EU accession have had a major influence in shaping and prioritising the actions which will (concurrently) also lead to compliance with the LBS protocol targets.

A main consideration in the accession process was a firm belief that EU membership would lead to a general improvement in the quality of the environment, including the marine environment. Many of the topic areas which were discussed and negotiated have relevance to the implementation process of the LBS protocol as expressed in the sectoral plans detailed in this document.

Compliance with EU requirements will in some cases be achieved through agreed phased implementation plans. These negotiated plans will, however, be implemented within timeframes which are more stringent than those required by the protocol. They principally concern urban wastewater treatment and discharge, the improved management of urban solid wastes, and the reduction of emissions from power-plants. In specific cases Malta will also benefit from EU financial assistance for the implementation of these commitments.

Additionally, many of the actions envisaged in the reduction plans set out in this document have been initiated a number of years ago. Indeed the planning for the construction of the required infrastructure to affect the required degree of treatment of urban waste waters has been in process for over a decade.

It is thus not possible to retroactively quantify the costs which have been incurred in the process since a large proportion has never been accounted for in a separate manner.

Moreover, in spite of the undoubted benefits which will accrue from the improvements which will be brought about from the reduction in emissions of pollutants into the marine environment, no cost benefit analyses has been carried out during that time.

This results from the general popular consensus that this infrastructure needs to be put in place anyway in order to improve the quality of life, as a matter of priority without the need for any formal justification of the required expenditure.

There is now, in addition, another 'incentive', Any non compliance by Malta with the commitments entered into as part of our EU accession process, will bring about legal procedures by the commission in respect of any non-compliance with the environmental acquis. These infringement procedures usually are concluded with monetary penalties which in any case do not remove the requirement for satisfactory implementation of commitments. In effect there is no 'do nothing' option for Malta.

An estimate of the required investment to accomplish the obligations under the NAP are indicated throughout the text, especially in the tables of the previous chapter. It is to be understood that the obligations to implement the LBS protocol would have been incurred in any case in order to satisfy EU commitments

The following 'portfolio' refers to the required main investments, and is prepared according to the indications in the guidelines.

Project	FINAL SCORE					
Construction of UWWT plants	Benefit	Development	Financial Sustainability	Feasibility	Cost	Total
	25	20	15	10	1	71

Consideration	Score	Scaling	Final Score
Project with public health benefits	5	5	25
Development impacts on a major sector (tourism and recreation)	4	5	20
High financial sustainability (sale of treated water, potential for cost recovery through polluter pays principle)	3	5	15
High feasibility (standard and proven technology)	2	5	10
High costs Lm33 million	1	1	1

Project	FINAL SCORE					
Separate collection of waste fractions	Benefit	Development	Financial Sustainability	Feasibility	Cost	Total
	20	16	6	10	1	53

Consideration	Score	Scaling	Final Score
Project with increased (over present practice) public health benefits	5	4	20
Development impacts on a major sector (tourism and recreation)	4	4	16
Low financial sustainability. Some potential for cost recovery through polluter pays principle	3	2	6
High feasibility (standard and proven technology)	2	5	10
High costs Euro 5.5 million	1	1	1

Project	FINAL SCORE					
Control emissions from Landfills	Benefit	Development	Financial Sustainability	Feasibility	Cost	Total
	20	20	3	6	1	50

Consideration	Score	Scaling	Final Score
Project with increased (over present practice) public health benefits	5	4	20
Development impacts on a major sector (tourism and recreation)	4	5	20
Low financial sustainability. No cost recovery possible	3	1	3
Medium feasibility	2	3	6
High costs Euro 9 million	1	1	1

Project	FINAL SCORE					
Control of Nox emissions from power plants	Benefit	Development	Financial Sustainability	Feasibility	Cost	Total
	15	4	3	10	3	35

Consideration	Score	Scaling	Final Score
Project with increased (over present practice) public health benefits	5	3	15
Development impacts on a major sector (tourism and recreation)	4	1	4
Low financial sustainability. No cost recovery possible	3	1	3
High feasibility Proven technology	2	5	10
Medium costs Euro 0.9 million	1	3	3

Overall Investment Portfolio for 2010.

Project in order of priority	Cost	Funding Source	Commencement Date
Construction of UWWT plants	LM33 million	Public	Commenced
Separate collection of waste fractions	Euro 5.5 million	Public	Commenced
Control emissions from Landfills	Euro 9 million	Public	Commenced
Control of Nox emissions from power plants	Euro 0.9 million	Public	Commenced

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