Malta Resources Authority
Annual Report 2001 - 2002

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MRA

MALTA RESOURCES AUTHORITY

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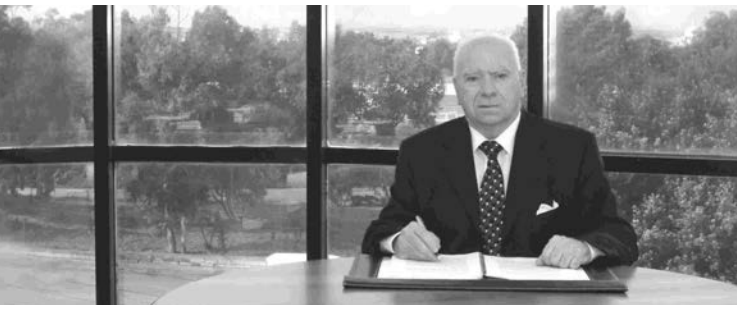


The Malta Resources Authority assumed regulatory responsibilities for operations in the energy, water and minerals sectors in February 2001. As the Authority's first Chairman, I am pleased to present this publication, reporting on the activities to September 2002.

The principles of MRA's functions should not merely be considered in light of Malta's commitment towards EU accession. They ought to be appreciated in the context of contemporary development and knowledge. Economic progress over the past twenty years brought about escalating demands for natural resources. Recent concerns, backed by scientific evidence, show that rising production and consumption of these resources cause complex and diverse problems impacting on public health, security of supply, the economy and the environment. MRA has been established to mitigate these problems, and also to ensure that consumers may benefit from modern standards and levels of efficiency in the provision of these resources. European legislation guides us in the best way forward.

Founding the Authority from scratch has, by no measure, been an easy task. The concept of regulation had to be defined to include modern key principles of sustainable development, namely, economic growth, social development and environmental protection. From the starting block it was clear that the three regulated sectors required gradual and cautious reforms to be introduced, without at any time, disturbing the delicate socio-economic balance. These reforms require comprehensive analysis, reflecting upon all that is at stake, to ensure that policies and decisions are balanced, that they can be implemented objectively and that they may be complied to without unnecessary burden. MRA began its work by assessing its legal and social obligations. Capacity requirements were identified to build a lean but an effective structure of specialised personnel. We examined the various practices that needed to be regulated together with complementary processes taking place within other authorities. Then, we could commence with the formulation of our policies without duplicating any work already covered by other governmental institutions. Following this, our activity is now progressing at a rapid pace, particularly with projects in the energy and water sectors. MRA will bring forward the most equitable and reasonable regulations following necessary dialogue with the respective stakeholders. We are fortunate to be able to take advantage of international sponsorship programmes by way of foreign consultancies. These will enable us to introduce the most appropriate regulatory systems which will take into account Malta's distinct geographic, demographic characteristics and culture.

We have today established licensing processes to the smaller operators in the related sectors. This was done by taking into account the new regulatory requirements and by harmonising the various licensing systems inherited from government utilities which were previously acting both as providers of the services and regulators. This was done without burdening applicants with new charges or delays in renewing their licences. Work is in progress on the licensing of Enemalta Corporation, Water Services Corporation and the Drainage Department.

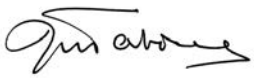
During recent years Malta has witnessed the advantages of liberalisation. MRA is focusing on

the exploitation of new opportunities, particularly within certain facets of the energy sector. We have to use utmost caution in the way that competition is introduced as the three sectors impact substantially on the economy and the people. The energy and water utilities are characterised by their dependence on governmental support. They need to be spurred into more efficient practices and MRA will endeavour to achieve this aim. We began to study the energy sector to clearly identify the areas which could provide private investment opportunities to establish which regulatory reforms are required. We intend to extend our studies to cover the other two utilities that provide essential services. In this respect we seek to establish operational and economic stability through clear and transparent policies. Due attention will be given to these utilities to improve their operations with the scope that funds are applied to enable them to thrive in the face of competition. MRA will establish and maintain a level playing field wherein all investors, private and public are subject to the same rules.

MRA has much to reconcile between the various needs of the different stakeholders within the three sectors that it regulates. The consumer expects quality standards, security of supply and affordability. The investor requires stable and equitable policies which anticipate a sustainable return. The utilities need to be guided towards higher efficiency and business like management. To secure these objectives, monitoring programmes are being developed to ensure that Maltese society will benefit through the new regulatory regime.

For the coming months, the Authority has a long list of challenging priorities. It will strive to complete its team of technical staff and evolve into a more dynamic institution that is able to respond proficiently to its obligations.

Finally, I must praise the small team of executives and staff for their dedication and commitment during the past months. The Authority is confident that in the near future, clear benefits of its policies and projects will be fully appreciated by the stakeholders.



Joseph N. Tabone
Chairman

Chief Executive's Introduction

It is my pleasure to introduce this first Report on the Authority's activities and operations in regulating energy, minerals and water resources in our country. This Report covers a period of 20 months from February 2001 to September 2002.

The enactment of Act XXV of 2000 establishing the Malta Resources Authority is an important institutional development in the management of our national energy, minerals and water sectors. It provides the tool for the effective and transparent regulation of these sectors.

A question that is asked is why was another Authority necessary? Is it value-for–money for the economy?

Today, everybody accepts that resources need to be managed and regulated holistically and that sustainable development can only be achieved through collective action. The Authority is here to ensure that this in fact happens and that the right balance between the various aspects that together make holistic regulation are achieved. The success of the Authority, measured in terms of its value-for-money depends on its ability to get results by generating synergy and integrating the work of other regulators, stakeholders and utilities without duplication of effort. For this reason, we aim to maintain and continually strengthen our dialogue with other regulators. We aim to make a difference in the regulated sectors without being a burden on the economy or stakeholders.

In the final analysis, the *raison d'être* of the Authority is the improvement of the quality of life of citizens-whether directly or indirectly. As our work gathers momentum, we will be seen to be relevant and to be actually making a difference. The major projects that we are planning or implementing are good indications of this - whether it is the reform of the electricity sector following the principles set out in the Electricity Directive or the development of a strategy for the exploitation of renewable energy. All these will be tailored for our Maltese circumstances, while making the best use of experience elsewhere.

We aim to encourage sustained effective community involvement to make our work more transparent, participatory and hence worthy of general acceptance. So, in the first months of its operations, we met with various stakeholders, other regulators with complementary functions as well as service providers to identify the main concerns and issues characterising the regulated sectors. This exercise in dialogue helped us set priorities for the short and medium terms. During its first year of existence, the Authority issued a major consultation paper on the development of a strategy for the exploitation of renewable energy resources. This was widely well-received. We intend to continue this way and other consultation papers are being prepared for publication. A corporate website has been developed as an additional communication medium offered to our stakeholders.

Consumer protection is one other major responsibility entrusted to us in the MRA Act. This is particularly true for essential services such as electricity and water supply, which are basically public monopolies. Through the issue of appropriate operating licences, we will seek to put on a more structured and faster track the utilities' efforts at improvement. A first proposal for a licence document for the Water Services Corporation will soon be put on the website for public comment and consultation.

With the enactment of the MRA Act we have also taken over previous regulatory roles carried out by the Water Services Corporation and Enemalta Corporation. We will be critically reviewing policies and procedures that have been applied to date with the aim of streamlining and better meeting the community's needs. Work on drafting an energy policy document on behalf of Government has already started, and a critical review of licence schemes taken over from the utilities will start soon. The need of a groundwater allocation policy is very evident.

The work of the Authority in its sectors of responsibility is limited only by the innovative spirit of its officers and by the resources it has available. While I believe the former is not lacking, we still have to improve the latter, especially where expert resources are involved. As a country, we are passing through a phase of fast-moving change, where resources are scarce in relation to needs. We therefore have to adapt to circumstances and ensure a lean, results-oriented organisation, that makes the best use of its resources and works in synergy with other organisations locally and abroad to achieve the functions set out in its founding Act.

To supplement local resources, the Authority has sought to attain full benefit from the structures and programmes established by the European Union. It will shortly be initiating a twinning-light project with EU partners for the effective reform of the electricity sector. The Authority is also participating in a number of EU Fifth Framework Projects in the water sector and has also furthermore participated in a number of proposals for funding under the EU Sixth Framework Programme. A project with FAO, directed at solving a major policy gap in local water management - groundwater allocation - will hopefully take-off next year.

The period covered by this report coincided with the final phases of the negotiations for accession into the European Union. Together with other longer established regulators, the Authority played its part in this national effort. We have been engaged at length in the technical preparation, progress monitoring and in the transposition and implementation of various EU directives affecting the regulated sectors.

We are now looking forward to the future as our work gathers momentum. The tasks before us are extensive, but I am confident that with God's help and the cooperation of all officers of the Authority, we will succeed.

I hope you will find this first annual report informative and I welcome any comments that you may have as this will help us improve both our reporting and underlying activities.

Antoine Riolo
Chief Executive

The Authority

Mr. Joseph N. Tabone KM, CPPA, FIA, FCIB, FCIF, FBIM.	Chairman
Mr. Amadeo Mifsud A. & C.E.	Deputy Chairman
Mr. Robert C. Aquilina	Members
Dr. Eugene Buttigieg LL.M. (Exon.), LL.D.	
Ms. Marthese Dimech B.Eng. (Hons), M.Sc.	
Mr. Andrew Mangion B.A. (resigned 28th August 2002)	
Mr. Mario Caruana	Secretary to the Authority

Ing. Antoine Riolo B.Sc., (Eng.) M.Sc. (Glas.), M.I.Mech E., C.Eng.	Chief Executive Officer
Ms. Phyllis Farrugia DMS (Lond.), MBA (Brunel)	Director for Energy Resources Regulation
Dr. Godwin Debono B.Sc., M.Sc., D.I.C., Ph.D (Lond.)	Director for Minerals Resources Regulation
Dr. John Mangion D.Geol. (Milan), FGS	Director for Water Resources Regulation

A New Regulator for the Energy, Minerals & Water Sectors

Malta Resources Authority: A New Regulator for the Energy, Minerals & Water Sectors

This first annual report of the Malta Resources Authority reviews the period February 2001 to 30th September 2002. This period is considered as the first financial year of the Authority and covers the first twenty months of its operations.

A New Regulatory Authority

Legal Framework

The Malta Resources Authority was established through the Malta Resources Authority Act (Cap. 423) of 2000. The Authority assumed regulatory responsibilities for operations and activities in the energy, water and minerals sectors which were previously exercised by Enemalta Corporation, Water Services Corporation, the Police and other authorities.

Article 4 of the Malta Resources Authority Act establishes the functions of the Authority, which may be broadly summarised as regulating, monitoring and keeping under review, as well as licensing, permitting and authorising, all practices, operations and activities relating to energy, water and mineral resources.

The Malta Resources Authority Act provides that the affairs and business of the Authority are the responsibility of the Authority. The legal representation of the Authority is jointly vested in the Chairman and the Chief Executive. The Chairman and members of the Authority were appointed by the Minister for the Environment on 2nd February 2001. The Chief Executive took up his post on 1st January 2002.

From its setting up to the 30th September 2002, the Authority held 19 meetings.

The Act schedules three Directorates each dealing with a specific resource - energy, water and minerals - and through which the Authority carries out its functions.

The Director of Energy Resources Regulation was appointed in April 2001 and the Directors of Minerals and Water Resources Regulation were appointed in January 2002. The Director of Mineral Resources Regulation also acts as the Director (Oil Exploration) at the Office of the Prime Minister since the section of the MRA Act dealing with petroleum has not yet been put into effect.

The Resources Appeals Board

Appeals against any decision taken by the Authority and any regulations made under the Malta Resources Authority Act are heard by the Resources Appeals Board appointed by the Minister for Resources and Infrastructure. This Board is independent of the Authority and has the same powers as competent to the First Hall, Civil Court, according to law. Subject to an established procedural arrangement, the Malta Resources Authority Act also provides for the eventuality where any party may further appeal to the Court of Appeal on a question of law.

The Resources Appeals Board was set up on 4th September 2002. Within days of its setting up, the Appeals Board was presented with an appeal against an Authority's decision dealing with groundwater allocation, where the Authority had decided that certain boreholes illegally extracting groundwater had to close down.

Improvements to the Legal Framework

The first year of operations has revealed a number of shortcomings in the legislative framework which need to be addressed such that the Authority discharges its functions more effectively. Some of these necessary amendments can be addressed through subsidiary legislation.

The adoption of the Act was accompanied by the deletion of a number of provisions concerning

powers formerly exercised by the Water Services and the Enemalta Corporations. Since these provisions did not arise from subsidiary legislation, they did not survive the adoption of the Malta Resources Authority Act through the operation of Article 36(1) and a number of lacunae now exist. These can only be filled through the adoption of new subsidiary legislation, adopted under the Malta Resources Authority Act, reviving the deleted provisions and the powers which used to be exercised by the Water Services Corporation and the Enemalta Corporation in order to safeguard resources.

Other shortcomings concern procedural issues which may also, as a general rule, be addressed through the adoption of subsidiary legislation. Recommendations will also be submitted to the Minister for certain amendments in order to enable the Authority to function more effectively. These include:

- provision for the possibility of administrative sanctions, with specified limits and, possibly, for limited cases only;
- provision for the imposition of compromise penalties in lieu of the (higher) penalties, which may be only be imposed following a Court conviction;
- clearer provisions concerning the execution of inspections and the inspection powers of the Authority.

Why a New Regulator?

Government's reasons for establishing the Malta Resources Authority were identified by the Honourable Minister for Resources and Infrastructure when introducing the relative Bill in Parliament.

The MRA Act provided for:

- the establishment of the principle of separation of the functions of the operator from those of the regulator. The regulator, while receiving general policy directions, was to operate at arm's length from Government.
- independent monitoring of the quality of service being offered by service providers;
- the creation of a level playing field particularly where various operators are in competition. A corollary is the fixing of price structures where essential services are concerned.
- the enhancement of transparency through supply of adequate information to the public on services being offered;
- the introduction of the principle of interconnectivity in the network industries;
- respect for the environment in the operations of the sectors concerned.

Mission Statement

The Authority has adopted the following as its Mission Statement:

"The Malta Resources Authority seeks to serve the Maltese community through effective, coherent, holistic and transparent regulation of the energy, minerals and water resource sectors of the economy, ensuring their advancement and sustainable use to support the integrated environmental, social, economic and business development in the Maltese Islands. It further seeks to contribute to and participate in ongoing regional development and assist in the nation's efforts to fulfil its international obligations in these spheres."

Corporate Strategic Objectives

For its medium-term corporate development, the Authority has identified the following strategic objectives. It will:

- establish an effective regulatory framework;
- structure its internal set-up and operations to deliver a high level of service to its stakeholders.

Despite the difficulties of taking-off, including the handicap of unsuitable office accommodation and an insufficient number of staff, the Authority has endeavoured to keep up high standards in all its activities.

An Effective Regulatory Framework

There is no history of holistic external regulation in Malta. Local experience in the past included ministerial direction and the major utilities regulating their own customers and competitors. The advent of the MRA should deliver a jump in quality of regulation of the energy, water and minerals sectors.

- Realising that regulation, to be effective has to be based on clear vision and sound science, the Authority will be commissioning various studies dealing with key reforms including:
  - that for the electricity sector based on a twinning programme with an established and experienced foreign regulator/organisation;
  - that for the internal fuel market, with the participation of local stakeholders;
  - that for the structured introduction of renewable energy.

It is expected that these studies will provide best direction and advice on the way forward, where necessary with an innovative approach.

- The Authority seeks to foster an understanding and acceptance of the concepts and benefits of external regulation. Last year, several opportunities to present the Authority and its functions to various audiences were taken, such as the Consumers' Council and Enemalta Corporation. This year specific seminars/workshops for discussion of issues of mutual interest with its stakeholders and mutual education will be organised.
- Consistent with its belief in transparency and stakeholder participation, the Authority has wherever possible submitted for public consultation and input major initiatives such as proposals for introduction of energy from renewable sources and for the transposition of the Water Framework Directive. All terms of reference for studies and consultancies include provision for continual consultation at appropriate stages.

Consultation will not be limited to specific issues only but it is a practice that the Authority intends to follow consistently leading to public participation and constant dialogue with its stakeholders in the course of the decision-making process.

- The role of the Authority is not perceived as one of manager of the market but as its regulator. A major value-added that the MRA will provide to the economy is piloting the innovative reform of the utility markets. The Authority, building on the strengths of the Water Services Corporation and Enemalta Corporation, will promote increased efficiency and independent monitoring of corporate performance of the service providers and will be benchmarking this performance with that of other comparable companies abroad. The contacts to benchmark the Water Services Corporation's performance have already started.

- The Authority will increase consumer protection through safeguarding against monopoly and anti-competitive behaviour through regulatory controls and will also achieve social objectives including ensuring adequate quality of service and ensuring fulfilment of public service obligations.

- The Authority recognises the value of learning through the experience of other regulators in countries which have been through similar reform processes as are planned for these islands. The Chairman and Chief Executive Officer of the Authority were invited to a five day visit to the United Kingdom to observe the workings of the U.K. regulators with similar competences to those of the Authority. Officers of the Authority participated in international fora, workshops and seminars on subjects such as the Energy Charter Treaty and European Regulators' meetings as well as meetings on specialised technical topics such as quarry waste, energy efficiency and isotope technology.

Delivering a High Level of Service

The Authority is aware that the consumer is the focus of its activities, whether directly through establishing price structures or indirectly when arbitrating between traders. It constantly strives to achieve a fair balance between the interests of its various stakeholders.

- The Authority is also aware that it has to tackle innovatively some long-standing problems in the local scenario. The regulated sectors and in particular the energy and water sectors are characterised by distinct challenges including:

  - traditional inefficiencies associated with state ownership of key industries;
  - legal monopolies;
  - explicit/implicit barriers to trade;
  - need for greater quality regulation and better customer service;
  - complex and onerous regulatory regimes;
  - need for establishing robust competitive environment.

- Since a human resource capability is fundamental to deliver on expectations, the Authority is aiming for a competent and a sufficient, though lean, staff complement that is balanced in the various disciplines required - economic, legal and technical.

Though requirements have been identified, recruitment at a practical level is not yet complete.

The Authority realises the importance of HR development. A feature of all consultancies it commissions is an appropriate training package for its staff to enable them to play the part in the development and practice of an appropriate regulatory framework.

Efficiency and avoidance of undue bureaucracy is another of the Authority's aims, and this to the benefit of its customers. Its objective is to provide a one stop service to its stakeholders, itself liaising with other regulators where multiple permits are needed. Effective, though so far informal, collaboration exists with other regulators e.g. the Malta Maritime Authority in the issue of fuel bunkering licences. Referral to other regulators, e.g. OHSA, OFT has occurred, avoiding duplication of expertise and effort while ensuring that the best service is given to clients. Memoranda of understanding with MEPA where issues of complementary jurisdiction are involved have been developed, while others are being drafted.

Corporate Affairs

Organisational Structure

The organogram of the MRA reflects the Authority's strategy that it will have a lean organisation, staffed with high-calibre staff, with the vision and competence to conduct effective regulation of the sectors.

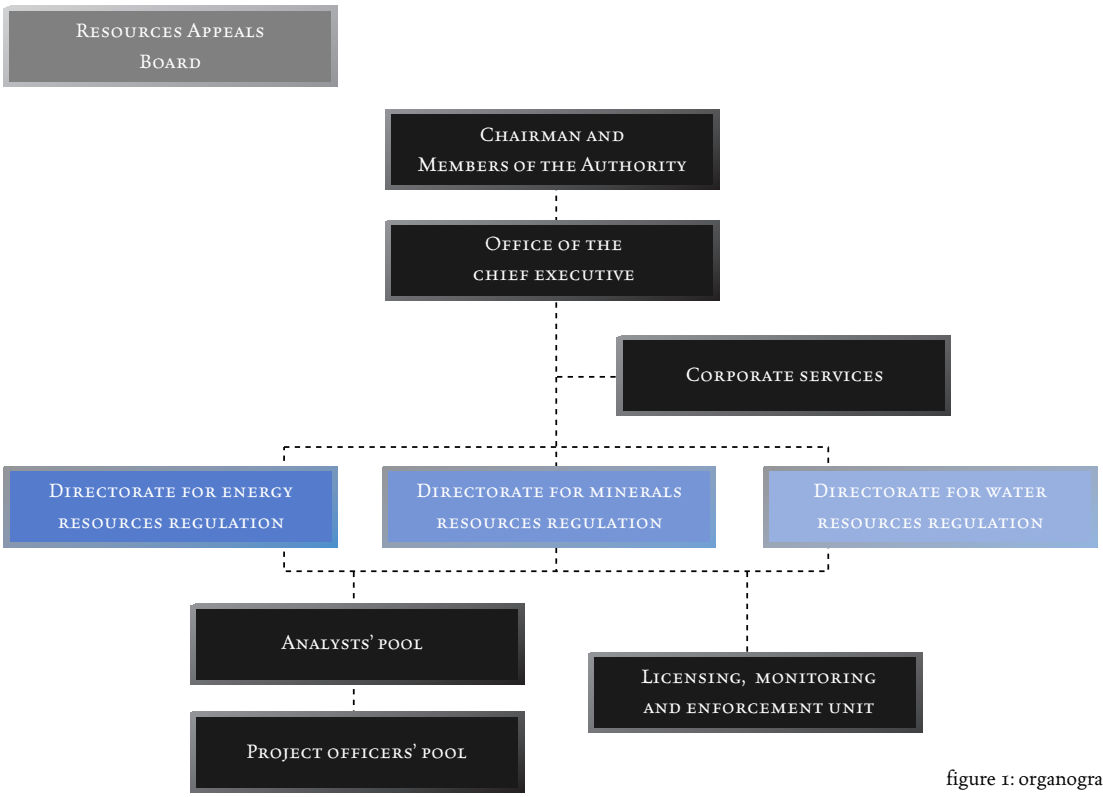


figure 1: organogram

The Malta Resources Authority, today consisting of the Chairman and five other members, has its functions clearly defined in Article 4 of the Malta Resources Authority Act. These functions range from regulating all operations and practices relating to energy, water and minerals to ensuring fair competition in the sectors. Regulation has to be holistic, and includes setting standards, fixing price structures, ensuring security of supply, environmental protection and policy issues.

The Chief Executive is responsible for the administration, the organisation and the administrative control of the Authority's officers and employees, as well as for the implementation of the objectives of the Authority in the exercise of its functions. The Chief Executive is also responsible for the overall supervision and control of the Directorates, and for the development of those strategies necessary for implementation of objectives of the Authority. The Chief Executive may advise the Authority on any matter considered necessary and expedient.

Each Directorate, headed by a Director, implements the Authority's policies and plans for that specific sector. Furthermore the Authority has provided for the necessary organisation to ensure its own transparent governance and efficient running, especially financial control.

The Authority has throughout its first months of effective operations endeavoured to identify and employ the necessary staff to fulfil its duties. A complement, consistent with its obligations, was identified. In common with the experience of other similar organisations, engagement of experienced personnel was difficult and the Authority was not fully successful in attracting a sufficient number of staff to take up the posts.

The Authority also obtained from Government departments and parastatal companies certain key employees whose experience is relevant to the Authority's business and who, in some cases, had specific training and experience in these matters. These officers assumed duties as technical analysts. Their efforts were directed at priority areas of activity including the Authority's contribution to the EU accession process and to environmental issues.

The Authority adopted a system whereby a core group of officers is assigned to each Directorate, while a number of other experts in various disciplines are assigned in Analysts' and Project Officers' pools. This system has the advantage that while the Directors are assisted by the core group to maintain the ongoing day-to-day conduct and management of the affairs and business of the Directorate, the various experts in the pools provide the technical expertise that may be required. This arrangement is economical in resources and gives each Directorate the opportunity to benefit from the experience and practices of the others. It also favours cross-fertilisation of ideas, synergies and uniformity in the approach to regulation.

Recognising that it is not possible or cost-effective to retain on a full-time basis the high-level, up-to-date specialisations that are required to deal with the various sectors at this stage of reform, the Authority makes extensive use of outside consultants to supplement its in-house resources and obtain high calibre expertise with efficient expenditure of resources. The Authority retained Messrs. Gatt, Frendo & Tufigno as its legal advisors and Deloitte and Touche as its financial advisors and auditors. Other consultants were appointed for specific tasks as necessary.

Corporate Support

Corporate Services (Finance)

The Finance Office is involved in financial review and monitoring of the utilities and entities operating within the regulated sectors including regulation of the price structures for the activities regulated by the MRA Act;

identification of the Authority's financial needs and drawing up of its budgetary plans and review; and compliance to regulatory financial and administrative obligations such as filing of statutory returns with the relative regulatory entities.

Part IV of the MRA Act establishes the financial provisions for the MRA. Funding of the Authority is based upon:

i. fees, rates and other receipts that may be prescribed under the MRA Act or any other law related to the Authority's functions;

ii. Government subventions as approved by Parliament to meet any of its expenditure that cannot be met out of its revenue for specified infrastructural works or capital expenditure;

iii. loans that may be raised in accordance with the provisions established by the MRA Act.

Licensing, Monitoring and Enforcement

A major task of the Authority is licensing activities, monitoring and ensuring compliance with licence conditions and good practice. While the design of the various licensing regimes remains the responsibility of the various directorates, a specific unit has been established to administer the licences.

Licences being dealt with up to 30th September 2002 include:

- within the energy sector:
  - general bunkering activities licence;
  - generator's licence;
  - petrol stations and kerbside pumps licence;
  - kerosene hawker's licence;
  - gas distributor's licence and
  - wireman's licence;
- within the minerals sector:
  - quarry licence;
- within the water sector:
  - sewer discharge permits;
  - swimming pool licence;
  - groundwater sources registration and
  - water tanker registration.

The legal mechanisms for enforcement have been established. The Authority is currently engaged in discussions with MEPA to explore synergies in enforcement between the two Authorities. Discussions are also underway with the Ministry of Justice and Local Councils to explore the potential of using wardens for enforcement purposes.

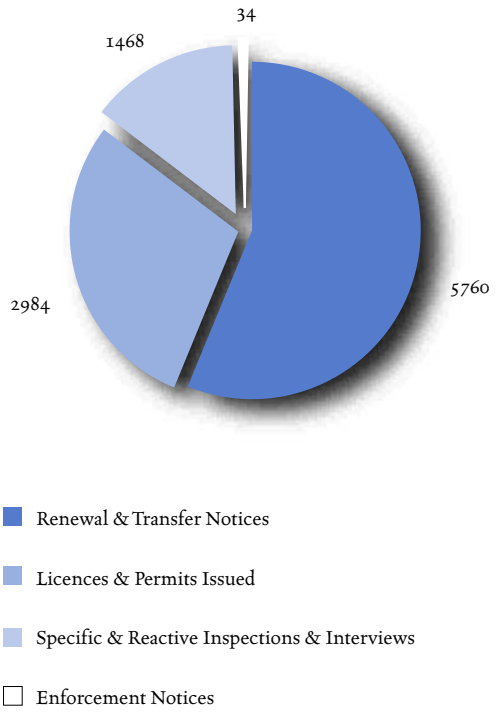


figure 2: licensing, monitoring and enforcement

Corporate Development

Corporate Offices

The Authority started functioning from temporary offices at Floriana. This space is far too small and unsuitable for the Authority's needs. It has therefore acquired, through a call for tenders, a larger space at the Millennia Complex in Marsa which is being developed in line with its needs. At the time of writing this report, architectural finishes, mechanical and electrical engineering services were being installed.

Development of a Website

In its first year of operation the Authority has developed a website which provides background information on the organisation. The website address is http://www.mra.org.mt. The website was designed to be a user focused site with emphasis on content and functionality. Its design targets two main user groups, namely, visitors interested in the MRA and its corporate functions and visitors interested in the regulatory functions in any of the three sectors: energy, minerals and water.

The site contains extensive library information including background information on the three regulated sectors, consultation papers, publications and press releases issued by the Authority, details on employment opportunities and tenders. Details on tariffs and licences established for the regulated services and decision notices issued by the Authority as well as relevant legislation are also accessible from the website. The website also has a text site search facility, and other additional features including enquiry and feedback forms, site map and help facility.

figure 3: website

Directorate For Energy Resources Regulation

Directorate For Energy Resources Regulation

Directorate's Functions

The Directorate for Energy Resources Regulation, set up in April 2001, was the first directorate of the Authority to be functional. This directorate took over the regulatory functions previously exercised by Enemalta Corporation. It also took over other responsibilities as scheduled in the Act, ranging from responsibility for energy supply security, to ensuring fair competition and recommending policy measures to Government.

The Energy Sector

The energy sector in Malta is of strategic significance.

Malta is a net importing country, with no known indigenous fossil sources and no refineries. This total dependence on product imports puts secure and regular energy supply at the top of the agenda of Malta's energy policy. The majority of fuel imports are sourced from the Mediterranean, which is also a significant energy trade corridor for the European Union.

Malta's electricity system is not connected to any other electricity network and, in the last two decades, it had to cater for a notable economic growth rate that brought about a trebling in electricity consumption and the doubling in the number of cars on our roads. Approximately 52% of Malta's potable water needs are derived from seawater desalination plants that consume some 9% (as at 2001) of all the electricity produced by the power stations. The publicly owned utility, Enemalta Corporation, strived to keep ahead of the increasing demand for energy generated by this economic growth and the improvements in standard of living by meeting the energy demand at a high investment cost.

Supply of energy products is accessible to all inhabitants of the Maltese Islands but the current quality standards being met leave a lot of room for improvements. During the last decade, Malta's internal physical energy infrastructure was strengthened and the process is ongoing. It is now coupled with other challenges, brought about by greater environmental awareness and a market structure that is being re-shaped to face the realities of this decade and the new economic dimension. Our economic policy is providing for the opening of markets and dismantling of barriers previously in place even with our main or potential trading partners.

Malta's energy sector must also be viewed within the context of the alignment process with the European acquis, which is giving both the push and the direction to the necessary restructuring. Malta is also party to a number of economic and environmental organizations and conventions from which obligations emanate, including the Energy Charter Treaty (2001), Kyoto Protocol (2001) and World Trade Organization.

The Maltese energy scenario is dependent, to a great extent, on the regional and global scenarios. This dependence is multifaceted, be it in technology or in primary energy sources and therefore regional co-ordination of policy issues is beneficial to mitigate the impacts of Malta's isolation, hence our participation in international energy fora.

Policy and Strategic Objectives

The policy direction adopted by the Directorate for Energy Resources Regulation has been to establish a regulatory process for the energy sector that holistically considers the current Maltese energy sector and the challenges it faces. The actions that are taken are directed to integrated and comprehensive management of the sector. This approach is a must as the energy dimension is increasing in dynamism and complexity. It is also very different from the regulatory regime previously operated by Enemalta Corporation that, with the establishment of the MRA, is now subject to regulatory oversight itself.

The main strategic objectives identified by the Directorate include:

- promoting a holistic reform strategy and building the regulatory framework for the restructuring of the energy sector in line with national objectives and commitments particularly security of supply, economic regulation of the utilities and environmental protection;
- streamlining regulatory procedures with other authorities;
- raising public and industry's awareness and promoting innovative approaches to energy delivery and use systems.

The main activities carried out by the Directorate in the past year were:

- drafting an energy policy on behalf of Government;
- participation in the EU accession process;
- initialising the framework for the development of a vision for the reform of the electricity market;
- development of a plan for the reform of the fuels' market.

Priority Actions

Reform Strategy and Building the Regulatory Framework

The initial actions were mainly directed at collecting and updating data about the sector and its participants. A project management approach had to be adopted for most functions, due to the changes that the segments are earmarked for and the transition processes that they would have to go through.

A number of studies have already been designed and are either taking place or planned for the forthcoming year. These will serve as a platform for the development of new regulatory mechanisms where necessary or where they have to change significantly due to new legislation and/or new policy directions. The latter include the economic and market regulation of the sector and covers the various activities of commercial and of general and economic interest of Enemalta Corporation.

The involvement of stakeholders through a staged consultation process is deemed to be a useful tool in the development and implementation of all issues of a significant degree. Where the issues are of a national significance, the breadth of such consultation is widened to include a public debate.

National Energy Policy

The Authority has been appointed by Government to advise on the formulation of an energy policy for Malta. In April 2002, the Authority was handed over the working paper finalised by the Malta Council of Science and Technology in January 2002. The Authority set up a group of experts to draw up a draft of an energy policy document.

The development of a national energy policy was listed in the President's address at the opening of the 9th legislature. The policy takes into account the white paper on an Energy Policy for the European Union and the European Union legislative programmes that reflect the integration of the EU's energy policy within the Union's economic policy.

The proposed draft energy policy for Malta seeks to capture and reconcile three objectives namely overall competitiveness, security of energy supplies and environmental protection. It explores the threats to these objectives along Malta's energy chain and identifies Government's response for mitigation based upon the principle of sustainability.

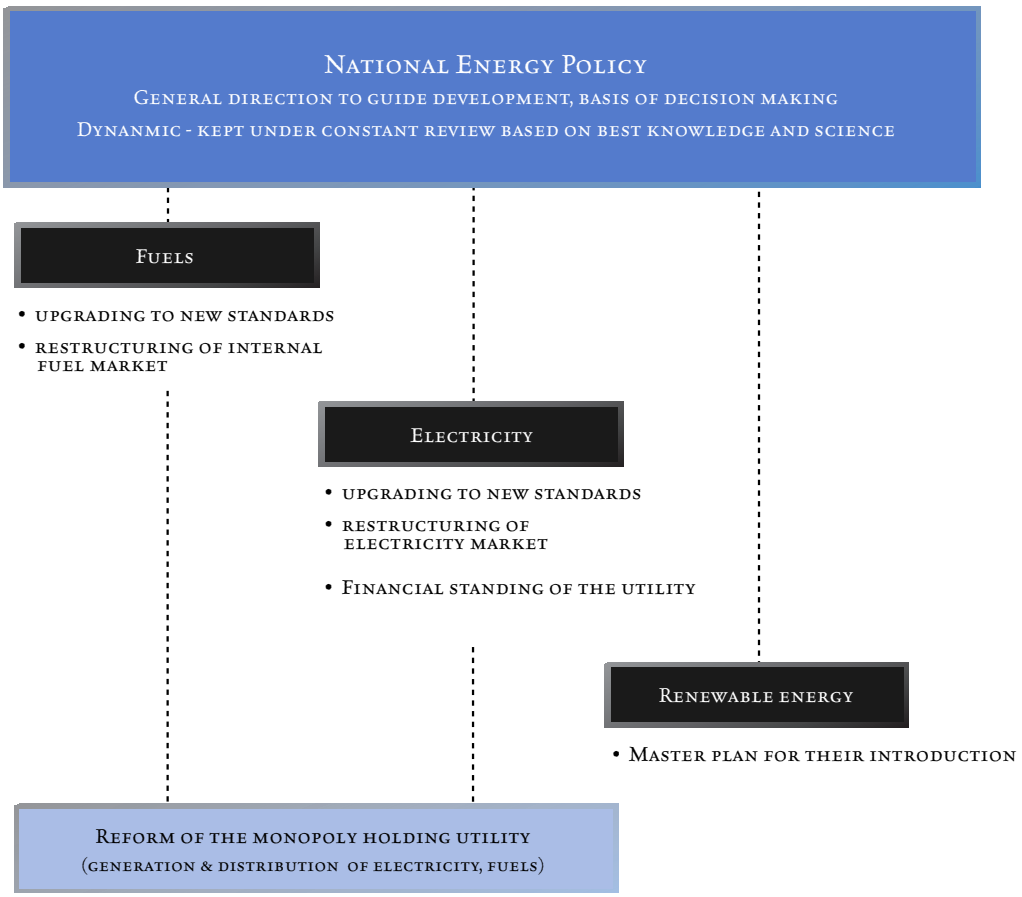


figure 4: sector reform/development

The Energy Policy will be Government's first documented policy instrument in this sector. An active stakeholder consultation and dialogue process is envisaged to ensure incremental improvement in the policy and decision-making processes. Furthermore it recognises the needs for continuous monitoring and assessment of the country's progress to meet existing energy challenges, continual evaluation of emerging external factors and priorities, which may dictate refinements to policy direction and strategies, and taking into account the interaction with policies and objectives in inter-related fields.

Legislation and Regulations

The legal framework to be adopted for the operation of this sector is still under development. Most of pipeline legislation is being designed to take into account the conclusions of the negotiations with the European Union under Chapter 14 - Energy. While an innovative and a progressive approach is being adopted, care is taken to avoid shocks to the economy, industry and to the socio-economic textures of Malta which are very dependent on energy and its cost. For this reason, a stepped approach in adopting policy measures is being taken, while implementation is being planned within reasonable timeframes.

All efforts of the Directorate are focused towards an improvement of services and products to the consumer. This brings to the fore a policy of transparency and the introduction of a regime of

economic regulation of the energy sector. This is a novelty to the sector that has thus far been dominated by Enemalta Corporation, an entity that is individually exempted from the Competition Rules.

Support to the EU Accession Process

A significant proportion of the time and effort of the Energy Directorate during the period under review was taken up by the EU accession process. The work involved included legislative screening when new EU Energy chapter legislation adopted between 2000 and 2002 was vetted, preparation of impact assessments arising from the adoption of legislation conforming to the EU Acquis if necessary, preparation of implementation plans and progress monitoring and reporting.

Accession negotiations of the chapter on energy were provisionally closed in on 31st May 2001. The MRA is the principal implementing agency of this body of acquis which relates to the internal market in both natural gas and electricity, energy efficiency directives, security of supply, promotion of the use of renewable sources of energy and other directives relating to nuclear energy and coal production. Most of these regulations were drafted during the second half of the year and have either been published or are at a very advanced stage of adoption.

During the period, the Directorate was involved in the negotiations relating to the Environment Chapter (Chapter 22) in areas relating to energy, such as the Large Combustion Plant Directive and Air Quality Directives. Negotiations on this chapter were closed in September 2002.

Negotiations are still ongoing on the Competition Chapter (Chapter 6). The Energy Directorate was involved in the justification of the transition period until December 2005 for the adjustment of the fuel trading monopoly in the inland market, currently held by Enemalta Corporation.

Directives Energy Chapter

- Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity.
- Council Directive 68/414/EEC of 20 December 1968 imposing an obligation on Member States of the EEC to maintain minimum stocks of crude oil and/or petroleum products.
- Council Directive 73/238/EEC of 24 July 1973 on measures to mitigate the effects of difficulties in the supply of crude oil and petroleum products.
- Directive 2001/77/EC - The promotion of electricity produced from renewable energy sources in the internal electricity market.
- Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas.
- Council Directive 91/296/EEC of 31 May 1991 on the transit of natural gas through grids.
- Council Directive 90/547/EEC of 29 October 1990 on the transit of electricity through transmission grids.

Directives Environment Chapter

- Council Directive 94/63/EC on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations.
- Council Directive 93/12/EEC relating to the sulphur content of certain liquid fuels.
- Directive 98/70/EC relating to the quality of petrol and diesel fuels.
- Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.
- Council Directive 96/82/EC on the control of major accident hazards involving dangerous substances.

Directives Competition Chapter

- Article 31 of the Treaty.

table 1: EU directives of major relevance to the energy sector

The Directorate also participated in the preparation of the National Development Plan. This plan, covering the period 2004-2006, aims to establish an integrated development framework including all aspects of social and economic development so as to catch up with the average levels of socio-economic development in the European Union. Energy is one of the sub-priorities as part of the development of the social and economic infrastructure.

Electricity Sector

Apart from the drafting of the regulations to transpose and implement the Electricity Directive (Council Directive 96/92/EC), the Authority is promoting its implementation in Malta. This will lead to the gradual opening of the electricity market in Malta.

In order to assist the Authority in devising a market design model that is the most suitable and applicable for Malta and to assist in the operation of the regulations, a twinning project was proposed and eventually was approved for financing through pre-accession funds. "Twinning" is a partnership, partially funded by the EU Commission, where experts are seconded to assist in the development of fully functional, efficient and sustainable administrations.

It is envisaged that this project will take the format of:

- assistinance to the MRA to develop a holistic vision, concepts and strategy for the reform of the sector, taking into account key Government policy objectives, lessons learnt in other countries and with the full participation of stakeholders;
- preparation of strategic and action frameworks identifying milestones along the path to reform, setting and prioritisation of strategic measures, legal and regulatory management instruments required, investment and restructuring priorities and development of specific action plans;
- review of the organisational structure and operations of the Authority in line with these plans.

This project is also preceded by two technical studies that have been commissioned or are in the pipeline.

A study on the financial performance of Enemalta Corporation was commissioned in July 2002 to a reputable firm of consultants. This project will be completed by December 2002. The main aim of this study is to obtain a comprehensive understanding of the financial standing and structure of the major utility. Specific objectives include:

- to establish a mutually agreed format of accounts that will fulfil regulatory obligations and form a basis for further regulatory action;
- to develop financial health and performance indicators relevant to the utility, including a baseline scenario from which efficiency gains and performance

improvements may be measured;
- to formulate a strategic and implementation methodology to the economic regulation of the utility; and
- to meaningfully authorise expenditure for capital investment and operational costs, for the fulfilment of public service obligations and hence tariff formulation.

The MRA is also aiming to develop a demand forecasting model. The objective is to have a long term decision support tool built on a sound scientific basis to forecast the generation capacity needs in the long term Specifications for the study have been completed.

Fuels' Sector

The Malta Resources Authority is the responsible authority to regulate this sector and in particular to promote and manage liberalisation.

In July 2002, the Authority set up an inter-ministerial task force under its chairmanship and included Enemalta Corporation to study and draw proposals on the restructuring of the various activities in the retailing of fuels in Malta.

Characterised by a group of small family businesses with allegations of anti-competitive behaviour, the market activities need to be restructured to reflect the new demand profile which is tending towards the bigger volumes of fuels handled by the industry and commercial outlets rather than the domestic kerosene consumer.

As at the end of the period under review, the Directorate was consulting with the stakeholders and collecting information from the market so as to be able to identify the potential solutions that will meet the evolving requirements of the consumers (domestic and industrial).

The process that is being followed envisages the:

- assessment of the current market structure and chain of supply to consumption;
- identification and assessment of key factors facing the sector;
- generation of strategic options (scenarios) of a liberalised but regulated market structure, within Government policy and after consultation with stakeholders, and improving supply market efficiency to allow for optimal cost structure; and
- recommendation of a road map to achieve a recommended option.

The MRA is the nominated competent authority responsible for monitoring and ensuring adequate quantities of oil stocks in accordance with national commitments and objectives.

The Authority is studying current developments and research on the main environmental and economic issues related to the introduction of alternative fuel sources for automotive use in Malta. Since there is no recorded experience on the application of these fuels for automotive use, the study is drawing on international case studies to highlight recent

developments and results on the subject. The part of the study on the environmental issues has been completed while more work is required on the economic issues.

Renewable Energy Sources

The aim of the Authority in this field is the establishment of a long term stable framework for the development of renewable sources of energy, covering legislative, administrative, economic and marketing aspects. The Authority's plan for the orderly exploitation of renewable sources of energy in Malta aims to:

- investigate the technical, environmental and economic aspects on the potential and feasibility of large scale exploitation of renewable sources to obtain electricity at national grid level;
- develop a comprehensive strategy and an implementation plan for their structured and orderly introduction into Malta including their integration with conventional electricity in the national grid;
- develop a methodology and procedures for the subsequent regulation of renewable energy generation and distribution and
- study technical, economic and regulatory aspects on the potential and feasibility of small scale electricity generation at consumer level for his own use and with access to the national electricity distribution grid for the balance.

A consultation paper on the exploitation of renewable energy sources for electricity generation was launched in April 2002 and closed on 17th June 2002. The Paper outlined general and specific terms of reference and the deliverables expected from consultants who would be appointed to undertake a comprehensive and independent assessment of renewable energy exploitation in Malta.

This Consultation Paper was widely well received. A total of 33 submissions were received from various entities or individuals. These submissions were collated in a report together with the Authority's response. The report was posted on the Authority's website in October.

Streamlining Regulatory Procedures

Licensing, Monitoring and Enforcement

The Energy Directorate, assisted by the Licensing, Monitoring and Enforcement Unit, is responsible for licensing a number of economic activities in the energy sector. The licence is used today as a mechanism for the Authority to regulate the sector through objective, transparent and non-discriminatory process for the equal treatment of similar sector activities.

The Directorate now issues licences that were previously issued by the Maritime Authority (which regards to bunkering activities) and by Enemalta Corporation for a span of other activities. Since for the latter it was very much a non-core activity (both in revenue terms and responsibilities), the mechanisms were found to be largely underdeveloped and served to regulate both the economic activity and the commercial relationship between the monopolistic supplier of goods and the 'agent' retailing or servicing the specific energy segment, which is of course inappropriate.

Where the expertise for the processing of certain licences is lacking in-house, or where a degree of autonomy is necessary, or even in the interest of efficient use of resources, the Authority sources out expert and professional technical advisors to assist it.

At this stage, where most of the information on the licensed activities is either already collected or is at a

very advanced stage, the directorate is drafting its objective policy and procedures for the licensing of the various operators in the energy sector. The policy will objectively seek to develop the licensing tool as a versatile mechanism to meet the requirements of regulation without excessive burdening to the market operators be they the utility or the licensed electrician. Indeed cases will arise where notification or registration will be adopted rather than licensing.

Various licences are issued by the Authority as part of energy resources regulation and are reported hereunder:

- Wireman's licence. Currently there are two permits of wireman's licence. The wireman's licence A is intended for electricians authorised to carry out single phase installations only and the wireman's licence B for electricians authorised to carry out single phase and three phase installations.

  An advisory committee was established during the period under review. This technical committee met regularly to vet new applications and assess applicants. A total of 83 applications were received by the Authority and 48 of which were processed during this period.

- General bunkering activities. There are seven major bunkering activities registered with the Malta Resources Authority and two new applications are currently under consideration.

- Generator's licence. A generator's licence is issued to enterprises (domestic and industrial) wishing to generate electrical energy through the installation of a generator. There are 872 registered generators with the Malta Resources Authority.

- Petrol stations and kerbside pumps. During the period under review, questionnaires to 93 operators of petrol stations and kerbside pumps were sent by the Malta Resources Authority to update existing data and for survey purposes.

- Jobbers and kerosene hawkers. These are licences for the sale of kerosene and the Authority is processing the registrations and updating data for 6 jobbers and 28 kerosene hawkers.

- Gas distributor's licence. This is a licence issued for the distribution of gas cylinders for Malta and Gozo. There are 31 gas distributors covering all areas. The Authority is still considering how best applications for the transfer of licences can be dealt with.

Raising Public Awareness and Promoting Innovative Approaches to Energy Delivery and Use Systems

Participation in International Fora

Council of European Electricity Regulators (CEER)

The MRA is the Maltese representative in the European Electricity Regulatory forum for which it was initially invited in February 2002.

The forum was set up by the EU to discuss issues regarding the creation of an internal electricity market that are not addressed in the Electricity Directive. It convenes twice a year and the most important issues addressed at the forum concern cross border trade of electricity, in particular tariffication of cross border trade in electricity exchanges, and the allocation and management of scarce interconnection capacity and EU security of supply of electricity.

Energy Charter Treaty

Malta acceded to the Energy Charter Process in May 2001. On the 10th July 2001, the Government of Portugal, which acts as Depository of the Energy Charter Treaty, officially confirmed its receipt of Malta's instrument of ratification of the Energy Charter Treaty (ECT) and the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects. Malta thus became the 45th State to have completed the process of ratifying the Treaty.

The Energy Charter Treaty and the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects were signed in December 1994 and entered in legal force in April 1998. By September 2002, the Treaty has been signed by 51 states plus the European Communities (the total number of signatories is therefore 52). The Treaty was developed on the basis of the European Energy Charter of 1991. Whereas the latter document was drawn up as a declaration of political intent to promote East-West energy cooperation, the Energy Charter Treaty is a legally binding multi-lateral instrument, the only one of its kind dealing specifically with inter-governmental cooperation in the energy sector. The fundamental aim of the ECT is to strengthen the rule of law on energy issues, by creating a level playing field of rules to be observed by all participating governments, thus minimizing the risks associated with energy-related investments and trade.

The ECT's provisions focus on five broad areas: the protection and promotion of foreign energy investments, based on the extension of national treatment, or most-favoured nation treatment; free trade in energy materials, products and energy related equipment, based on WTO rules; freedom of energy transit through pipelines and grids; reducing the negative environmental impact of the energy cycle through improving energy efficiency; and mechanisms for the resolution of State-to-State or investor- to-State disputes.

The ECT process functions through a forum of the various working groups were member states, including Malta, participate regularly. Every working group, namely Investment, the Protocol on energy efficiency and related environmental aspects (PEEREA), Transit and Trade meets at least twice a year. In June 2001, Malta submitted its draft Country Report on Investment Climate and Exceptions to National Treatment. It was examined during the Investment Group meeting of 21-23 November and concluded on 4th December 2001.

A delegation from the MRA also attended the annual conference in December, which commemorated the 10th anniversary of the ECT and during which a political declaration was adopted by all member states, including Malta.

Euromed (Energy Forum)

The Euro-Mediterranean Barcelona Conference (1995) recognised the role of energy in the Euro-Mediterranean partnership and decided to strengthen cooperation, and especially dialogue in the field of energy policy. It was also decided to create adequate framework conditions for activities and the investments of the energy companies, while cooperating to create the conditions enabling these companies to extend the energy networks and to promote the interconnections.

The Euromed Trieste Ministerial Conference on energy in 1996 indicated the areas for cooperation in the field of energy and supported the setting up of the Euromed Energy Forum as an informal and flexible instrument in order to ensure the continuity of dialogue and to promote projects of regional interest. The Forum has drawn up an action plan for the Euromed Partnership in the field of energy, covering the period 1998-2002. The Action Plan adopted by the Conference in Brussels in 1998, aimed at organizing the implementation of its objectives, namely security of supply, competitiveness and environment protection.

The projects falling under this framework and which function through dedicated working groups lead by EU appointed consultancies are:

- Legal and institutional energy framework;
- Energy sector company reforms;
- Energy policy training;
- Mediterranean electricity ring;
- Solar thermal applications;
- Energy and urban environment;
- Ad-hoc groups (initiated in February 2002).

The Maltese focal point for the forum is the Malta Resources Authority. Malta's participation in the working groups is also through the Malta Resources Authority and other experts from Enemalta Corporation.

Directorate For Minerals Resources Regulation

Directorate For Minerals Resources Regulation

Directorate's Functions

Within the MRA, the Directorate for Minerals Resources Regulation is responsible for promoting and regulating the exploration and development of Malta's mineral resources. The Directorate's purpose is to facilitate the development of mineral extractive industry that contribute substantially to the wealth and well being of the Maltese community, while meeting contemporary expectations for social and environmental outcomes.

The Maltese Islands possess substantial competitive resources for the extractive industry in the form of softstone and hardstone. No economic minerals other than stone and aggregate are found. The Directorate regulates the operations of this industry.

The value of building stone and aggregate material produced in Malta and Gozo is approximately Lm 10 million per annum. The extractive industry supplies low-cost aggregate and stone for use in the construction of roads, buildings and other civil engineering works. It also provides some 500 jobs in 58 softstone quarries and a further 300 jobs in 34 hardstone quarries. The output of this industry is largely controlled by the local demand. Opportunities for growth are limited by the environmental impact, which is causing grave concern to the community. In contrast, opportunities for import and mining are becoming more attractive.

The importance of the extractive industry to the local economy makes it necessary for Directorate to support and sustain this activity. However, it is also important to ensure that the industry is regulated so that it takes into account the range of social and environmental impacts as well as the economic.

Policy and Strategic Objectives

In its first year of operations, the Directorate has identified and started implementing a number of strategic tasks to fulfil the Directorate's mission for 2002 - 2005. These include the preparation of a mineral resources management plan supported by a comprehensive list of policies relevant to all possible operational phases of the extractive industry, and the preparation of terms of reference of projects that are meant to minimize the impacts of quarrying on the environment.

The objectives are summarized below:

- To provide a coherent legislative framework and policies such that the extractive industry continues to provide a competitive environment for resource exploration and development;
- To provide a consistent and transparent regulatory regime for the extractive industry;
- To ensure consumer confidence on services provided by the minerals industry;
- To provide industry specific facilitation and marketing services and to promote the development of the extractive industry;
- To meet the targets and international obligations set by Government;
- To address minerals related issues through sound science and credible technological methods.

Priority Actions

To attain the abovementioned strategic objectives the following priority actions have been identified.

Legislative Framework and Sectoral Policies

Quarrying Operations

Quarrying operations in Malta and Gozo were, up to 1992, regulated through a trade licence. This

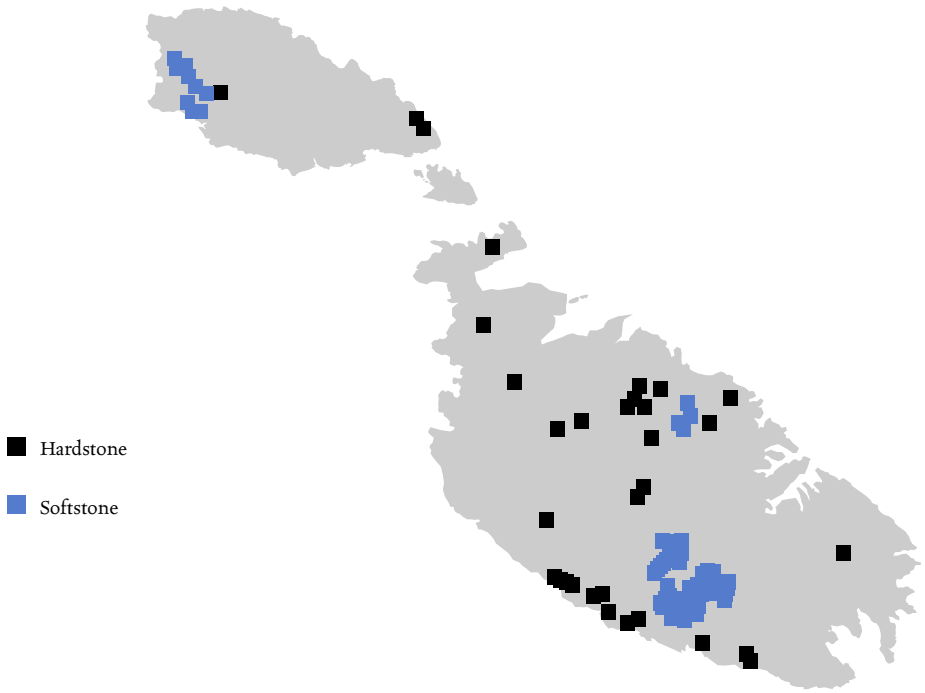


figure 5: distribution of quarries

	Estimated annual extraction million m³	Estimated authorised reserves million m³
Hardstone	0.8	23
Softstone	0.4	10

table 2: estimated annual minerals extraction and reserves

rudimentary form of control of minerals development rested heavily on the advice of the Water Board of the Water Works Department which had the main interest of ensuring that quarrying does not adversely affect the water supply derived from a system of underground galleries and boreholes. The Board imposed conditions on depths of quarries to ensure that galleries were not affected. A form of monitoring was also employed by the Water Works Department to ensure that these depths are not exceeded.

Environmental impacts were not adequately considered. In 1992, the Development Planning Act came into force and the Planning Authority was empowered to prepare a Structure Plan for the regulation, monitoring and control of land use, including quarrying practice and activities. The plan relating to quarries was completed in 2001 and approved in 2002 by the Planning Authority Board after a series of public consultations. The Minerals Subject Plan (MSP) is expected to provide a regulated form of land-use practice related to quarries for the next 10 year period.

Policies

The Structure Plan for the Maltese Islands (1990) provided the policy context for mineral development for about 10 years and considerable progress was made in improving regulation of minerals exploitation. The preparation of the Minerals Subject Plan of 2002 provided an opportunity to review the detailed framework for minerals and to consider the strategic policies that should be included in the Structure Plan Review.

A Minerals Board, composed of members representing the Malta Environment and Planning Authority, the MRA, the Works Division within the Ministry for Resources and Infrastructure, the Department of Agriculture, the Police and the General Retailers Trade Union also provides a key role in considering applications for new quarries and extensions. The Board is guided by a Quarries Code of Practice provided by the Minerals Subject Plan. It makes recommendations to MEPA, in connection with development permits of quarries.

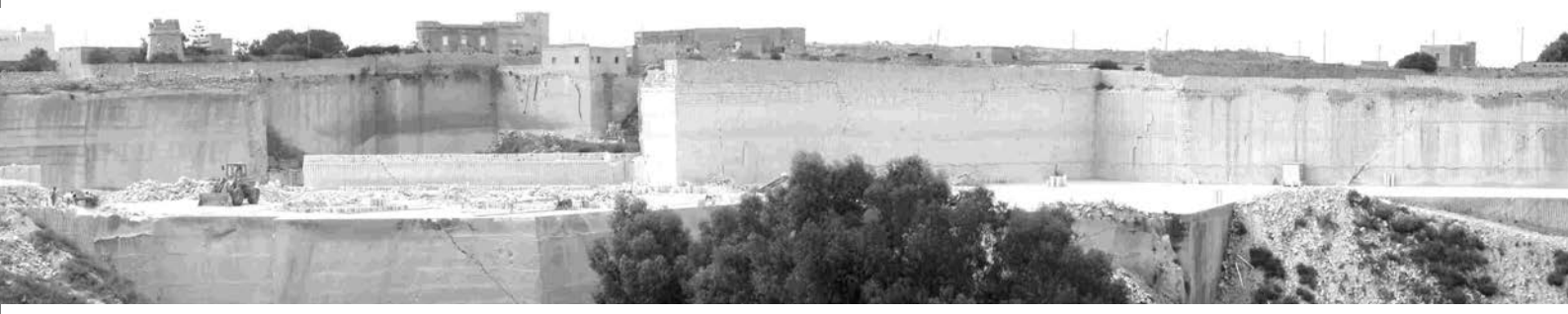
In the case of successful applications, a trade licence is then issued by the Police for the trading of the mineral resources. MRA will be seeking a reconstitution of the Board to reflect recent changes in the regulatory structure of the industry.

The Directorate has adopted a mineral resources management plan for 2002-2005 on the basis of economic, social and environmental considerations including:

- the sustained availability of mineral resources to the construction industry at competitive prices;
- the conservation of mineral resources;
- the protection and restoration of the environment;
- the respect to the social community;
- the possible availability of non-indigenous minerals as a supplement or substitute to the local resource;
- the possible economic use of waste stone.

A comprehensive list of policies relevant to all possible operational phases of the extractive industry was compiled in draft form. These policies relate to new operations, reactivation of old quarries, extensions, renewals, restoration of disused quarries, conservation of mineral resources, protection of the environment, social and community issues, health and safety, fair competition, price regulation, quality standards, information, consultations with interested parties and national and international obligations.

The Directorate will assess the effectiveness of existing mineral resources control mechanisms, particularly those of the Minerals Subject Plan for the Maltese Islands, and where appropriate develop and introduce new mechanisms in line with the adopted



management strategy. In addition a comprehensive list of policies relevant to all possible operational phases of the extractive industry - new operation, reactivation, extension, renewal, restoration, etc. will be established.

Licensing, Monitoring and Enforcement

With the coming in force of the MRA Act, in 2001, the responsibilities for functions relating to the extraction of mineral resources became distinct from those relating to general land-use. While MEPA remains responsible for functions relating to land-use, the MRA is now responsible for functions relating to the extraction of mineral resources.

Extractive industry sites must now have a development permit approval of MEPA as well as a Quarry Licence from the MRA. The extractive industry will thus be regulated by these licences.

There are a total of 92 quarries in Malta and Gozo, 58 which are softstone quarries and 34 are hardstone quarries. The Licensing, Monitoring and Enforcement Unit is at present processing licences for these quarries. A data collection exercise on all quarries is being commissioned.

A data-bank of quarry licences was initiated and the Directorate started receiving the annual licence fees that were previously collected by the Police or Local Councils. During this transitory period no changes were made to these fees.

Regulations

The Directorate will seek to establish effective regulations on the economic operations of quarries, ensuring acceptable environmental impacts and fair competition and equity. To achieve this, the Directorate will translate the policies into rules and establish the legislative instruments and mechanisms for their implementation.

Draft regulations intended to control quarries operations were being prepared during the reported period. These regulations will compliment the planning guidelines on quarries issued by MEPA.

Administration of Mineral Resources

The main priority administrative actions that the Directorate will pursue include establishing effective mechanisms for the processing and issuing of quarry licences. The Directorate will establish standards, and carry out monitoring and enforcement to ensure that industry operations meet community expectations, licence conditions and relevant obligations.

In addition the Directorate will be liasing with various statutory bodies including MEPA on environmental and land-use planning issues; the Building Industry Consultative Council on minerals' standards and stone specifications and waste; the Health and Safety Authority to ensure safe work practices and Local Councils on social and environmental issues.

Other administrative priority actions identified which are also corporate-wide involve the recruitment and training of personnel in mineral resources; establishing reporting mechanisms as may be required; development of stakeholder consultation procedures; submissions to the Authority's website and development and implementation of educational campaigns.

Several consultations were held with MEPA on applications for development permits of quarries, renewals of quarries' permits, applications for dumping into quarries, applications for rehabilitation of quarries, and applications of development permits of major projects involving major excavations of mineral resources.

Consumer Confidence

Actions described previously are seen to contribute towards increased consumer confidence. It is the

intention of the Directorate to introduce a Customer Service Charter. Furthermore the Directorate will tackle complaints against fair competition by stakeholders as they arise while it is also the intention of the Directorate to collect information on customer satisfaction.

Industry Specific Services

The Directorate recognises its role to provide industry specific services which contribute towards the development of the extractive industry. This includes the provision of high quality geological information on Malta's mineral resources, and maintenance of a historical geological database. To this end all data related to mineral resources and the geo-environment will be integrated to provide for optimal management of the resources.

Meeting the Targets and International Obligations set by Government

Support to the EU Accession Process

The Directorate participated in an EU working document related to a proposed directive on the control of waste originating from quarries and mines. The new directive is expected to come into force in December 2002.

The Directorate also submitted its recommendations to the EU Directorate on the control on the export of Malta Stone.

Addressing Mineral Related Issues through Sound Science and Creditable Technological Methods

The Directorate will address minerals related issues through sound economic, scientific and technological methods. In particular a study to assess the potential and implications for the extraction of stone by mining techniques will be commissioned.

Terms of reference for three major studies identified in the Strategic Plan were prepared as follows:

- Study to assess the feasibility of introducing mining extractive techniques. This study will assess the potential extracting minerals by mining techniques rather than the traditional open pit quarries. Such a practice would safeguard the continued production of stone and aggregates while reducing the negative impacts on the local geo environment, landscape, flora, fauna etc. Furthermore, as building development has rendered many potential sites of good mineral resources sterile for quarrying, mining could make available a considerable volume of minerals for extraction which would otherwise be inaccessible by the traditional open pit extraction.

- Study to assess the feasibility of importing aggregates. This study will assess the economics and benefits of the importation

of aggregates to Malta from the surrounding coastal Mediterranean states. The study will deal with quality, availability and economics of the imported aggregates. Such a practice, if feasible, would safeguard the geo-environment, archaeological sites, sites of scientific interest and the environment at large and improve markedly the quality of concrete products and road surfacing.

- Study to identify the re-use value of waste stone. This study is meant to identify possible economic re-uses of waste globigerina stone. Such uses could include manufactured stone materials; agriculture; paper industry; medicine; paints industry; and other applications.

The Directorate participated at the annual meeting of the Forum of European Geological Surveys that was held in Helsinki and attended by all EU Member and Accession States. The meeting reviewed the current trends of each European geological survey and discussed various themes of the mineral extraction industry with emphasis on sustainability and the environment.

Directorate For Water Resources Regulation

Directorate For Water Resources Regulation

Directorate's Functions

The mandate of the Directorate for Water Resources Regulation is defined under Article 5(2) of the MRA Act 2000 (Cap. 423) that assigns to the Directorate the "responsibility for the regulation of all practices relating to water resources, drainage and sewage". It started to function effectively in February 2002 when the Director was appointed.

Water resources in Malta and Gozo are scarce and constantly under the threat of competing use, as a result of a high population density and rapid rate of economic growth. Various sectors place today considerable and conflicting demands on our limited water resources. The use of alternative non-conventional resources to meet water demand, in particular that for municipal purposes is therefore unavoidable. In our arid island scenario, water resources have to be managed rationally by aiming to maximise the use of groundwater conjunctively with desalination in the most cost-effective way.

The first positive step towards water regulation took place in 1942 with the enactment of the Underground Ordinance and this was later followed by the Water Services Corporation Act of 1991 that saw the transformation of the Water Works Department into a public corporation.

The Water Services Corporation has a legal monopoly over the production and distribution of water supplies, while the Drainage Department is responsible for the collection, treatment and disposal of wastewater.

Although the Groundwater Ordinance and the WSC 1991 Act provided the necessary tools for water regulation, it was only in 2000 that the Malta Resources Authority Act XXV legislated the establishment of an independent Authority, taking over the regulatory responsibilities held until then by the WSC. The new Authority, through its Water Directorate regulates today all activities, operations and practices related to water and ensures the sustainable development of all water resources.

The Water Directorate is seeking to address various economic and environmental issues that affect the water sector today. In particular it aims to ensure sustainable use of natural resources, promoting adequate legislation and protecting groundwater as a strategic source of freshwater. Furthermore the Directorate is seeking to align its strategies with those set by Water Framework Directive and the Groundwater Directive in particular, in its endeavour to improve the status of water bodies and guarantee the availability of water supplies to all economic sectors.

The Directorate is well placed to promote integrated use of all water resources, whether treated sewage effluent, groundwater, stormwater and desalinated water as well as promoting efficient use and avoidance of waste.

Policy and Strategic Objectives

The Directorate developed a strategic plan for the first three years (2002 - 2005) of operation, setting out strategic objectives and the relevant tasks needed to reach the Directorate's goals. To fulfil its mission the Directorate identified six strategic objectives based on an assessment of the existing needs of the sector and the results expected from the Directorate on a national scale. These objectives are:

- Stewardship of natural water resources;
- Building an active and informed constituency on water related issues;
- Establishing effective economic and financial efficiency regulation of the water utilities;
- Ensuring consumer confidence and

satisfaction on services provided by the water industry;

- Meeting the targets and international obligations set by Government;
- Addressing water related issues through sound science and credible technological methods.

Priority Actions

For each of the aforementioned objectives, a set of priority activities was set for the three year period starting 2002. This report outlines those activities hitherto performed by the Water Resources Directorate within the strategic perspective outlined above.

Stewardship of Natural Resources

EU Water Framework Directive

The EU Water Framework Directive 2000/60/EC aims at establishing a framework for the qualitative and quantitative management and protection of water. It is considered to constitute best practice in water management and is therefore being adapted for local conditions and transposed into Maltese law. It sets ambitious targets for the protection and sustainable development of water resources and it is being given high priority on the activity agenda of the Directorate.

Government intends to apply and bring into force the provisions of the Directive by September 2002. MRA in conjunction with MEPA is responsible for organising the transposition of the Directive into law.

The transposition process was open to public comment and a consultation paper published. Public reaction was sought on:

- specificities in the directive that need further elaboration prior to transposition and implementation;
- an administrative set-up that was proposed to ensure the most effective implementation of the directive.

The first draft regulations are targeted for issue by the end of October. All comments received are being analysed, prior to the Authority's review of the draft legislation. It is also intended that a summary on the stakeholder consultation will be published in a concise document on the Authority's website.

Groundwater Directive

Directive 80/68 on the protection of groundwater against pollution from dangerous substances has been transposed and published as Legal Notice 203/2002.

The transposition of this directive required a multidisciplinary involvement between MRA's legal counsel and analysts to ensure an effective and accurate representation of all provisions prescribed by the directive. As the directive provides for the

regulation of direct and indirect discharges of dangerous substances in groundwater it requires having in place the necessary capacity to carry out field investigations, monitor groundwater quality and issue authorizations. The Directorate prepared a work plan that defines the tasks envisaged for the implementation of the provisions prescribed by the Directive and the resources required.

Consultations on Groundwater Protection

The Directorate is a regular consultee to the Malta Environment and Planning Authority (MEPA) on hydrogeological and related matters. Between January and September 2002 about 350 requests for consultations on planning applications have been received, ranging from small scale ones (rural buildings etc) to large developments (golf course, tourist facilities etc) having a more extensive footprint and potentially a more pronounced impact on groundwater resources.

In its effort to standardise its recommendations for different types of developments and expedite the processing of planning applications, the Directorate classified all incoming requests into categories, and identified for each category a set of groundwater protection measures, that need to be followed during construction and throughout the operational lifespan of the development. Practices followed in other countries, particularly in the U.K., were closely examined and applied where deemed to be effective and feasible. Groundwater protection measures have now been standardised for different types of development and will be shortly available for public viewing on the internet. The applications for development submitted to MEPA and referred for consultation to the Authority are categorised as shown in Table 3.

Further to these routine applications, the Directorate submitted recommendations to MEPA to be included in the Terms of Reference (TOR) for Environmental

Development Type	No
Agricultural tool rooms	93
Apiary	6
Boundary walls	12
Cemetery	1
Cess-pit	12
Farms	74
Deposition of soil	11
Electricity substations	3
Farm house	5
Fireworks factory	2
Garages - industrial	7
Greenhouses	34
Hunting lodge	2
Industrial estates/zones	3
Manure clamp	4
Old people's home	2
Petrol stations	2
Pump rooms	23
Quarries - related	6
Reservoirs	59
Road network	1
School	1
Sports facilities	3
Stables	5
Various	20
Waste separating bins	4
TOTAL	395

table 3: consultations on applications for development

Recommended for approval	269
Recommended for refusal	21
Pending	41
Awaiting submission of further information (waste management plans, construction details etc.)	64

table 4: status on consultations on applications for development

Note: Some applications included more than one type of development

Impact Assessments that are statutorily required in relation to major development projects including the Ras il-Hobz sewage purification plant, development of engineered landfill sites, White Rocks tourist facility and the Hondoq ir-Rummien yacht marina.

Proposal for an Engineered Landfill

The Directorate is currently assisting the Works Division's consultants in their hydrogeological survey at Maghtab.

In addition detailed recommendations on the terms of reference of the EIA for this development were submitted to MEPA in view of the potential impact of such facilities on groundwater resources. In its recommendations the Authority referred to issues highlighted in article 10 of the Groundwater Directive 80/68/EC and in the Landfill Directive 99/31/EC. In addition the Authority recommended that the EIA's terms of reference should include submission of details and relevant information on various issues including:

- details on the project proposal and methods of disposal including characterisation of landfill during operation; energy, water and mineral resource requirements; details on landfill gas characteristics and influencing factors;
- a description of the sites and their surroundings including details on geology, geomorphology, palaeontology, hydrogeology and hydrology;
- an assessment of environmental impacts and risks of the proposed development with particular reference to geology, geomorphology and palaeontology, hydrology and hydrogeology, and other geo-environmental and economic issues;
- design of mitigation measures including technical precautions and mitigation measures required to be implemented to prevent any discharges into or pollution of groundwater.

Building an Active and Informed Constituency on Water Related Issues

Groundwater Monitoring

One of the tasks required for the achievement of this objective is the establishment of mechanisms for monitoring groundwater quality and quantity. The Water Framework Directive requires the *"definition of programmes for the monitoring of the water status in order to establish a coherent and comprehensive overview of water status……. For groundwater such programmes shall cover monitoring the chemical and quantitative status……..."*

A study has been undertaken with the aim of setting up a groundwater monitoring network covering the main aquifers in Malta and Gozo. In setting out the standards for the monitoring network, the guidelines of the European Environment Agency in its report on the setting up of an integrated EEC Groundwater Monitoring programme, were followed. Due attention was paid to make the best use of existing monitoring points thus reducing the need and expense for drilling new ones.

A grid of square meshes of 4km by 4 km was adopted for the new network; this mesh size is slightly lower than that proposed for the EEC monitoring network. Ideally the network requires a borehole placed at the centre of each mesh, but for practical reasons and wherever possible the well nearest to the centre point was chosen for this purpose. Where a monitoring well is missing a new one is proposed.

Overall, the new network (Figure 6) for Malta requires, for quantity monitoring, the drilling of

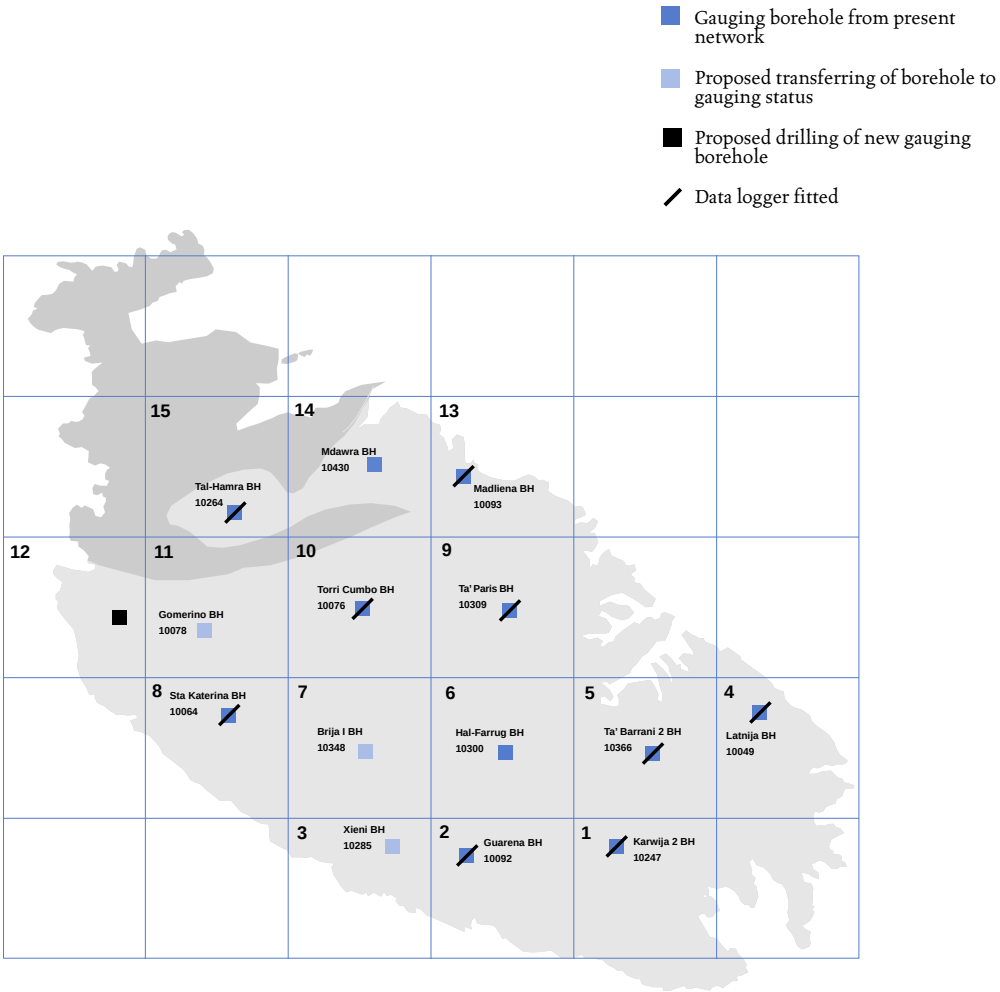


figure 6: proposed groundwater monitoring network for mean sea level aquifer

one new well in western Malta and the decommissioning of two pumping boreholes, and their subsequent conversion into gauging wells. In Gozo, three wells will be converted for gauging purposes while a new well will be drilled in the eastern part.

As for quality monitoring the most central productive source in each mesh was designated as the quality monitoring point. Furthermore the quality profile of the freshwater lens will be monitored regularly from the piezometric surface to the interface in four deep wells that have been purposely deepened to traverse the freshwater lens down to the interface.

There is no available network for quantitative monitoring of the perched aquifers. Hence the study recommended the monitoring of piezometric levels in six pumping stations in Malta and Gozo, and the flow from springs.

The Directorate has already made presentations with the Water Services Corporation for the transfer of hydrological and aquifer data.

Euro-Mediterranean Water Information System

Water has long been considered a priority area in the Euro-Mediterranean Partnership. In 1992, the Mediterranean Water Charter was adopted in Rome, establishing the principle of regional and international cooperation in the water sector. The priority nature of water was emphasised in the Declaration adopted in Barcelona in November 1995 and subsequently confirmed as one of the six priority sectors of economic cooperation in the Mediterranean Region at the conference of Ministers of Foreign Affairs in Stuttgart in April 1999.

The first Ministerial Conference on Water held in Marseille in November 1996 led directly to the establishment of the Euro-Mediterranean Water Information System (EMWIS), a system whose importance was subsequently emphasised in the Declaration of the Turin Conference in October 1999.

This project is a Euro-Med initiative that aims to establish an information system on know-how in the water sector in the Euro-Mediterranean region. The 27 countries of the European Union and the Mediterranean are participating.

The aim of the EMWIS project is to gather and make available to decision makers information on the water sector which otherwise exists in a fragmented, dispersed and heterogeneous manner. This project also serves as a tool for co-operation between Euro-Mediterranean countries in developing the sharing and facilitating the access to information and to define common outputs and programmes. Five EMWIS topics were established at the Marseille Conference, namely:

- Institutions / Organisations;
- Training;
- Research;
- Documentation; and
- Data Management.

The information is made available by a "National Focal Point" (NFP) in each country and by a central "Technical Unit". Only information sources granted with a "quality label" by EMWIS managers could be accessed through the system.

The Malta Resources Authority, supported by the Water Services Corporation (MIS Unit), is the Maltese organisation responsible for the establishment of the NFP for Malta. A website was established on www.emwis.org.mt.

The past year was a strategic year for the development of the system. In November 2001, the Water Directors met in Madrid, where the activities of the first phase were reviewed and a plan for the second phase was prepared. Malta was once again chosen to sit on the steering committee and elected to the vice-presidency of the Coordination Committee. Representatives of the MRA attended the information and training seminar for data managers in Madrid in October 2002 and the meeting of the Steering Committee held in Rome in September 2002.

In the meantime, the MRA continued with the updating of the data in the EMWIS website and development of the organisation database which reports on organisation active in the water sector in Malta. The legislation section was substantially updated in view of the extensive number of regulations issued by the MRA and the MEPA.

Establishing Effective Economic and Financial Regulation of the Water Industry

Regulation of the Water and Wastewater Utilities

Article 26 of the MRA Act 2000 mandates the Malta Resources Authority "to secure and regulate the acquisition, production, storage, distribution or other disposal of water for domestic, commercial, industrial or other purposes…."

While WSC is today the exclusive entity entrusted with the public obligation of satisfying the national demand for water, it is the duty of MRA to produce the necessary regulatory instruments to ensure the fair provision of this essential service. During the year, the Authority drafted a first licence to the Corporation to regulate its function in accordance with the law. The purpose of this licence is to serve as a:

- structured introduction of concepts of regulation in Malta in the water sector;
- structured compilation of information from the Water Services Corporation that will enable effective, coherent and transparent regulation of the utility;
- basis for further development of regulation of the water sector.

Similarly as the MRA is obliged to secure and regulate treatment, storage, disposal, and re-use of sewage, waste water and sludge, it is its duty to secure and regulate the provision of these services and ascertain their efficient functioning.

The Drainage Department is the government entity and operator responsible today for all activities related to sewage collection, disposal and treatment. A second operating licence is therefore being prepared as a regulating instrument to the Drainage Department on similar lines and with similar aims as that issued to WSC.

The Authority is also finalising Terms of Reference for consultants to assist it in an assessment of the institutional framework that is required to establish a sewerage undertaker for the Maltese Islands.

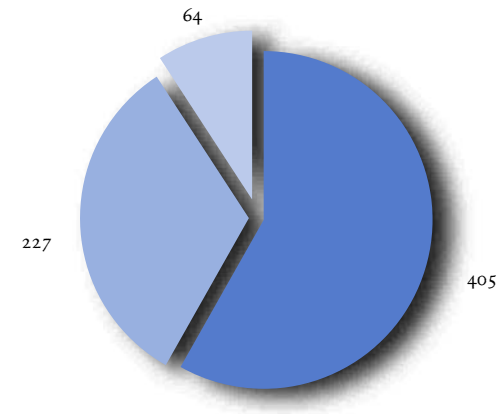
This study is intended to assist the Directorate in understanding the nature of operations relating to the collection, treatment and disposal of waste water for the purpose of its subsequent regulation.

This project is intended to propose the necessary institutional structures that would be required in order to rationalise the operations of those players currently involved in the provision of sewerage services. The project will seek to identify potential areas of overlaps and commonalities amongst, and with, other organisations in order to develop an integrated framework for the establishment of a single sewerage undertaker.

Other Licences

Various licences are issued by the Authority to regulate the water sector and these include:

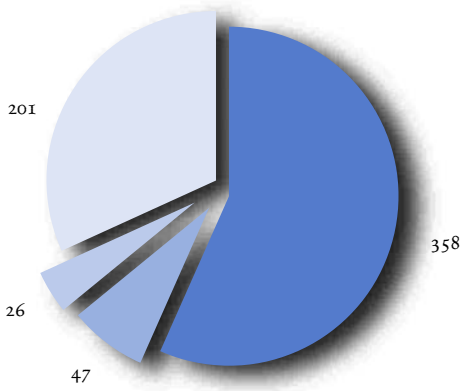
- Sewer discharge permits. This is a permit issued to all trade premises that generate industrial effluent such that this meets the parametric limits in Legal Notice 139 of 2002. In special cases, where the effluent in certain trading premises exceeds the parametric limits as established in Legal Notice 139 of 2002, the Authority may



Effluent treatment facility present

Effluent treatment facility absent

Premises closed



Effluent treatment facilities effective

Effluent treatment facilities ineffective

Effluent treatment facilities absent - awaiting declaration

Effluent treatment facilities absent - to be installed

figure 7: inspections of caterings establishments

establish a specified time frame to attain the established parametric limits. A catering industry inspection campaign was carried out. A total of 1,416 reactive and specific inspections were performed for 696 catering premises and the results are shown in Figure 7.

The pollution source inventory available is being upgraded into a comprehensive national emission inventory for indirect discharges. The Malta Resources Authority is contracting out a number of surveys to collate data for this inventory. Physical inspections have been contracted to the Drainage Department and the MRA's enforcement officers audit their work.

The MRA is also contracting out work related to the catering and agricultural industry to the Health Inspectorate.

The emission inventory will enable the MRA to establish pollution reduction emission programmes and national monitoring programmes.

Swimming pool licence. This is an annual licence required for the operation and use of swimming pools. The Authority took over the administration and management of this licence from the WSC. A distinction is made between freshwater and seawater swimming pools and conditions of operation depend mainly on the siting of these pools.

Groundwater sources. The Malta Resources Authority is preparing the framework for establishing a groundwater abstraction licensing system. During the period under review, an abstraction licence for groundwater sources operated by the Water Services Corporation was being drafted.

A similar licence will be formulated for the private sector in the near future.

- Water tanker registration. All water tankers carrying potable water, non-potable water, liquid waste and seawater, require registration. An inter-departmental committee including representatives of the MRA, Malta Standards Authority, Ministry of Health and the Ministry of Agriculture has been set-up to establish regulations governing the operation of water tankers and associated safety and security measures.

Consumer Confidence and Satisfaction on Services Provided by the Regulated Industry

As noted earlier the Directorate has drafted operating licences for the production, supply and distribution of water by the Water Services Corporation and for the collection, treatment and disposal of wastewater by the Drainage Department. The licences establish the main measure to ensure fulfilment of public service obligations by the utilities and promote consumer confidence and satisfaction.

In particular the licences provide for the development of customer contracts which would specify:

- the rights and responsibilities of customers having or requesting provision of the services;
- the levels of service against which the utilities would be required to operate;
- arrangements and procedures for dealing with complaints and resolving disputes;
- arrangements and procedures for giving appropriate service to customers with special needs;
- a billing plan based on regular readings and invoicing and arrangements for payment;
- a code of practice and procedures on disconnection/suspension of service;
- consequences including compensation scheme and settlement of damages;
- exceptional circumstances where the utilities may deviate from fulfilling their service obligations.

The draft licence also provides a framework for the approval of the Customer Contracts by the Authority, their revisions and for the dissemination of information to the public.

In addition the Water Directorate will be liasing with the Malta Standards Authority on material specifications and with the Health and Safety

Authority on safety measures and practices at the place of work. It will also analyse customer complaints against fair competition by stakeholders as they arise and collect information on customer perception of the public utility (WSC).

Meeting the Targets and International Obligations set by Government

Support to the EU Accession Process

Legislative and supporting technical measures

The MRA participated in the screening of EU directives, regulations and decisions relating to water sector. This included environmental legislation issued post 1999, in particular the Water Framework Directive and the annex relating to priority substances. Additional screening was also carried out in relation to mutual recognition issues arising from Articles 28-30 of the Treaty and the Competition Chapter.

The MRA also supported the negotiating process by finalising the documentation supporting a request for a transition period till December 2005 for the implementation of Directive 98/83/EEC (quality of water intended for human consumption) with regard to the application of Annex I Part B on nitrate and fluoride and to bring these substances in line with the limits required by the Directive. Moreover, a plan was presented for the reduction of levels of Part C parameters - conductivity, chloride, sodium, sulphate and iron - by the end of 2007.

This plan includes the construction of a low-pressure membrane-based polishing (purification) plant. This request was made for the following reasons:

- the need to stagger investment requirements over a reasonable period of time - costs are estimated to reach Lm18 million in capital investment plus an annual cost of Lm2.7million;
- technical constraints particularly preparatory work required prior to any construction of treatment plants necessary to treat groundwater to required standards - such as evaluation of alternative sites and environmental impact assessments;
- logistical constraints such as the time required for tendering and plant construction;
- resource constraints including insufficient availability of trenching contractors.

In the water sector, Malta also requested transition periods of:

- six years for the implementation of Directive 91/271/EEC (urban wastewater treatment) involving the construction of wastewater infrastructure for the collection, treatment and disposal of wastewater. Pre-accession assistance was requested for the implementation of certain necessary infrastructural projects.
- six years for the implementation of Directive 76/464/EEC (pollution caused by certain dangerous substances discharged into the aquatic environment) to allow industry to meet the sewage disposal parameters of this Directive.

The Minister for the Environment also issued regulations transposing the:

- Urban Wastewater Treatment Directive (Legal Notice 340/2001 transposing Directive 91/271/EEC concerning urban wastewater treatment);
- Nitrates Directive (Legal Notice 343/2001 transposing directive 91/676/EEC on the

protection of waters against pollution caused by nitrates from agricultural sources);

- Dangerous Substances Directive (Legal Notice 227 of 2001 and daughter regulations transposing Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community and daughter directives); and

- Surface Water Directive (Legal Notice 339/2002 transposing directive 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water).

The Malta Resources Authority was nominated the competent authority for the dangerous substances regulations as far as indirect discharges are concerned, and for the surface water directive.

A key directive that is in the process of being transposed is the Water Framework Directive (Directive 2000/60/EC establishing a framework for Community action in the field of water policy).

Its purpose is to establish a framework in order to achieve the main objectives of a sustainable water policy including to:

- prevent further deterioration and protect and enhance the status of aquatic ecosystems;

- promote sustainable water use based on a long-term protection of available water resources;

- aim at enhanced protection and improvement of the aquatic environment;

- ensure the progressive reduction of pollution of groundwater and prevent its further pollution; and

- alleviate the adverse impact of floods and droughts,

leading to:

- the provision of the sufficient supply of good quality surface water and groundwater;

- a significant reduction in pollution of groundwater;

- the protection of territorial and marine waters; and

- achieving the objectives of relevant international agreements.

The Directors of Water of the European Union and candidate countries have, while seeking to ensure

against infringing on the competence and responsibility of the individual states to implement the directive and recognising that specific national questions may arise, agreed to develop a Common Strategy by developing guidance notes. The MRA together with MEPA are also participating in this process through the Expert Advisory Forum on Reporting and that on Priority Substances. In addition, the Directorate is also participating in a Fifth Framework Programme research project that is directly related to this directive by establishing baseline conditions for the groundwater. Details on the project are reported further on.

Certain European Union legislation (directives) would need to be amended should Malta become a member of the Union. The MRA participated by reviewing the draft technical adaptations to the directives that would eventually form part of the Treaty of Accession.

Progress Monitoring

Extensive monitoring of progress in the transposition and implementation of EU legislation was carried out over the reporting period. The MRA participated in the reporting and extensive consultation process in the exercises.

The Environment Directorate of the EU Commission contracted consultants to carry out a progress monitoring report on all candidate countries. The scope of the exercise covers each individual directive issued by the EU. This report covers the concordance of Maltese legislation with EU legislation and the implementation status of these directives. The latest report dated July 2002 noted "great progress has been made with transposition of water quality requirements" though "little progress has been made with implementation." Highlighted were limited implementation of the Water Framework Directive and advanced implementation plans for the Urban Wastewater Treatment Directive.

The Commission also commissioned an exercise covering the 'Analysis and approximation for Malta in the field of environmental legislation'. All environmental legislation was covered. The report, dated March 2002, covered the areas of status of transposition, implementation strategy and implementation costs. Total costs of implementation of the water and wastewater treatment sector amount to Lm8 million per year.

A separate exercise as a peer review was carried out by experts from other EU member states. The main topics covered administrative capacity in general plus a focus on certain areas of the environment acquis. The final report still has to be issued.

In the regular report on Malta, as far as water quality is concerned, the EU Commission noted the progress in the transposition and implementation of the water quality directives but pointed out that there should be further efforts on finalizing the remaining transposition of the water quality acquis, strengthening the overall administrative capacity and ensuring the implementation of the water quality acquis.

Technincal Assistance Projects

The Ministry for the Environment submitted a project proposal in 2001 that aims to tap pre-accession funds through a twinning programme to establish administrative capacity in the environment sector.

The aims of the project include the identification of procedures for the regulatory functions in the environment sector, development of training packages, preparation of a memorandum of understanding between MEPA and MRA, specifying the databases required and short-term advice on the water quality sector. In addition, the project envisages the development of a GIS system and the provision of monitoring equipment for the 'discharge permit unit'.

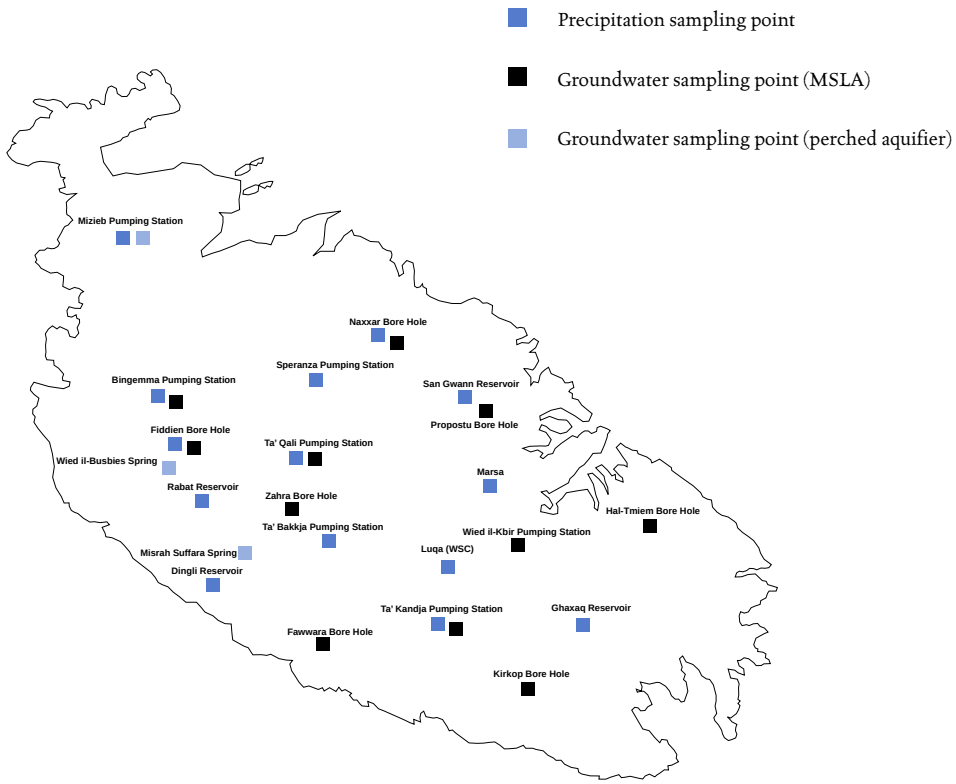


figure 8: sampling sites for the isotope programme

The MRA has already been involved in the selection process of the 'twin' organisation. The actual twinning programme is expected to commence next year.

National Development Plan

The Water Directorate participated in the preparation of the national development plan. This plan will set the 'integrated development framework for the Maltese Islands for the medium-term embracing all aspects of both social and economic development. It aims to establish an ambitious, but achievable and coherent development strategy supported by a fully quantified multi-annual investment commitment in the key areas of infrastructural development.'

The overall strategic objective of the National Development Plan is that Malta catches up with the average level of socio-economic development of the European Union.

A priority area is economic and social infrastructure where one of the sub-priorities is 'an efficient, reliable and sustainable water production, storage and distribution infrastructure to support national economic and social growth in compliance with EU Directives.'

The MRA coordinated the identification of measures and projects that aim to achieve this objective, and in the public consultation process both directly with NGO's and through active participation in the national

SWOT workshop held on the 25th and 26th April organised by the Malta Council for Economic & Social Development.

Addressing Water Related Issues through Sound Science and Creditable Technological Methods

Application of Isotope Technology to Groundwater Management

This is a project funded by the International Atomic Energy Agency (IAEA). The project started in 2000 and continued for the past two years. It includes:

- a survey of isotope levels in rainwater and groundwater from the mean sea-level aquifer (MSLA) and the perched aquifers;
- data interpretation by technical consultancy from the IAEA;
- training in hydrogeology.

Samples are regularly taken at two monthly intervals from nine boreholes in the mean sea-level aquifer and five points in the perched aquifers. Six other sites in the MSLA were also tested less regularly for control purposes. Rainfall samples were also taken from fourteen rain gauges whenever possible particularly after heavy showers .

It should be noted that the lack of rainfall registered during these last years seriously hampered the progress of the project.

All samples were analysed for ^{18}O and ^{2}H, some of them for ^{3}H, in IAEA laboratories. A total of 75 groundwater samples were analysed for ^{18}O and ^{2}H, 34 for ^{3}H; 89 rain samples for stable isotopes and 44 for tritium.

Furthermore all samples were analysed locally for their major ion composition (Na, K, NO_3, SO_4, Cl), alkalinity, total hardness, calcium and magnesium hardness, after determination of pH and electrical conductivity on the field.

The following are the initial observations arising from the work carried out so far:

- no altitude effect has been detected with ^{18}O possibly because of the generally low elevation (maximum 258 m) of the islands;
- the tritium content in rain is in the range 2.6 - 11.2 TU, with an average of 5.5 TU;
- groundwater tritium content is low in the MSLA, ranging from 0.2 to 3.1 TU, most of it being lower than 1.5;
- in the perched aquifer tritium ranges between 1.9 - 7.4 TU.

The interpretation of these observations merits some comment as it throws new light on the mechanics of groundwater flow and recharge.

The levels of tritium encountered in the MSLA show a long residence of groundwater. This is a very important observation and merits further investigation as it conceptually changes the current ideas of fast recharge into the MSLA. It may also warrant a strategic change in the management of groundwater resources. There could be two possibilities: either the prevalence of old freshwater in the MSLA or the mixing with seawater that is poor in tritium in the deeper parts.

The absence of the altitude effect in stable isotope content of rain and groundwater, excludes the possibility of using ^{18}O and ^{2}H as natural tracers to distinguish the recharge area. But tritium and nitrate levels in the MSLA measured at Fiddien Borehole suggests downward leakage from the perched aquifer possibly along major faults and discontinuities where

the clay seal is ruptured. Again this challenges current concepts that the clay is capping the lower aquifer and shielding it from pollution.

Based on the observations above, groundwater quality as known today is the net result of a mixing process between two recharge components:

- an old recharge without tritium and nitrate;
- a present day recharge rich in tritium and very rich in nitrate.

It appears that the major component in the MSLA is the first. A similar situation to chalk aquifers is being hypothesised. However investigations are proceeding and more tests for other isotopes are expected by the end of the year.

The data collected so far through the IAEA project revealed important observations. Additional information is now required to define accurately the recharge process. To this effect, nitrogen and carbon isotope tracers will be used for investigations during the coming months to identify the sources of nitrate pollution and the residence of groundwater both in the unsaturated and saturated zone. This will obviously lead to a better understanding of the dynamics of groundwater flow and a more scientific support to groundwater management.

IAEA also provided assistance by way of training scholarship to an MRA officer.

Findings of the IAEA study

The analysis of natural stable isotopes in rain and groundwater has yielded a series of interesting

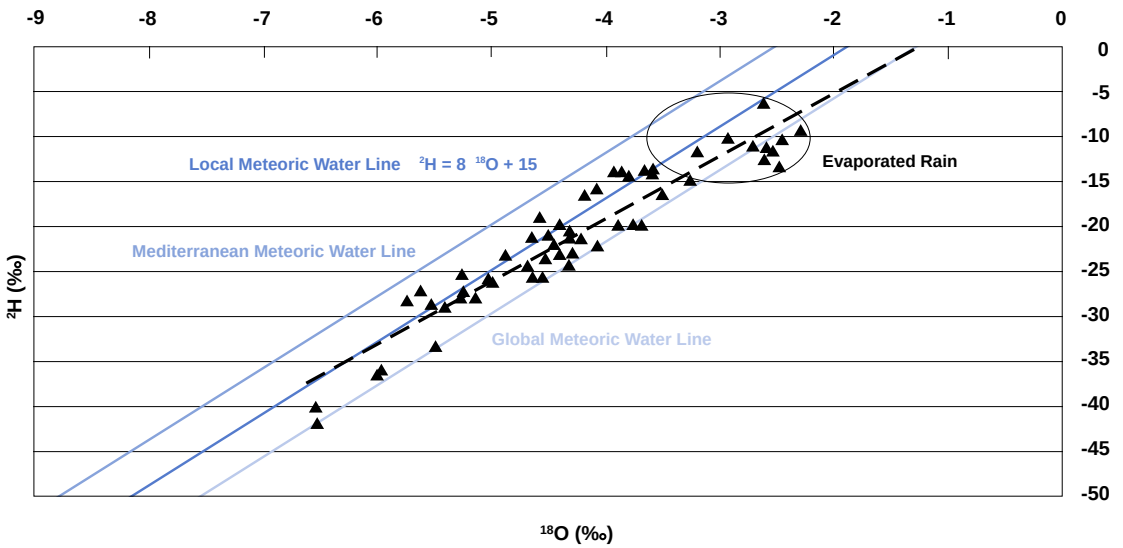


figure 9: ^{18}O vs ^{2}H content in rain water during the 2002 - 2002 period from stations in Malta and Gozo

Note: The regression line is built with all the values; while the Local Meteoric Water Line is built after eliminating evaporated rains and fitting the value of the slope to 8.

* The equation for the regression line is given by $^{2}H = 8\ ^{18}O + 15$ and is located between the two Global Meteoric Water Line and the East Mediterranean Meteoric Water Line in Figure 9.

findings that warrant more investigation on account of their importance from the perspective of water resources management. Results of tests have been analysed and have lead to a series of conclusions concerning the relation of groundwater status and land-use impact. Briefly these findings are:

- The correlation of values of ^{18}O and ^{2}H produces the "Local Meteoric Water Line" that compares levels of these two isotopes in rainwater (Figure 9). This line was benchmarked against the Global Meteoric Water Line and the Mediterranean Meteoric Water Line to assess the range of variation of ^{18}O and $^{2}H^{*}$ in local conditions.

- The correlation of values of ^{18}O and ^{18}O chlorides Cl- shows that most of the samples taken from the MSLA lie on a clear regression line (Figure 10) with an approximate linear trend again reflecting the degree of mixing with seawater.

  However, some samples taken from Ta' Qali Pumping Station deviate significantly from the mixing line. It is suspected that this could be due to the local leakage of desalinated water (of low chloride) content from the distribution network and/or the reservoir complex at Ta' Qali. This warrants immediate investigation. The other groundwater samples (Propostu, Tal-Hlas, Ta 'Kandja) show that the mixing with seawater is due to intrusion processes and is more pronounced during the summer months. It could be related to pumping for irrigation and associated upconing in the vicinity of groundwater sources.

- ^{3}H content in groundwater varies from that recorded in rain water. In general terms, it can be said that the MSLA is rather poor in tritium while the perched aquifers show higher levels that are closer to rain water. This is considered as an important finding as it reflects the residence time of groundwater in the two aquifers: high in the MSLA (around 40 years) and low (few years at most) in the perched aquifers. Our studies revealed that residence time is closely related to the thickness of the unsaturated zone and in both cases it

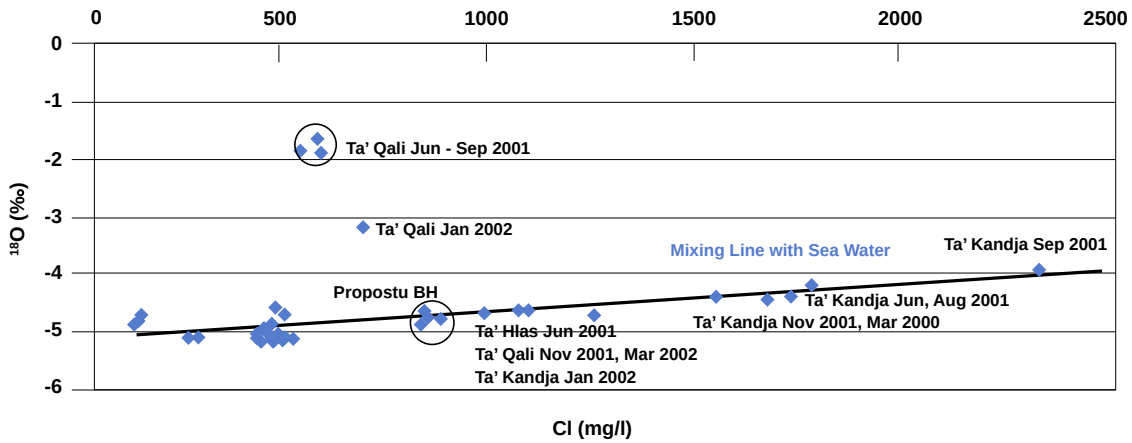
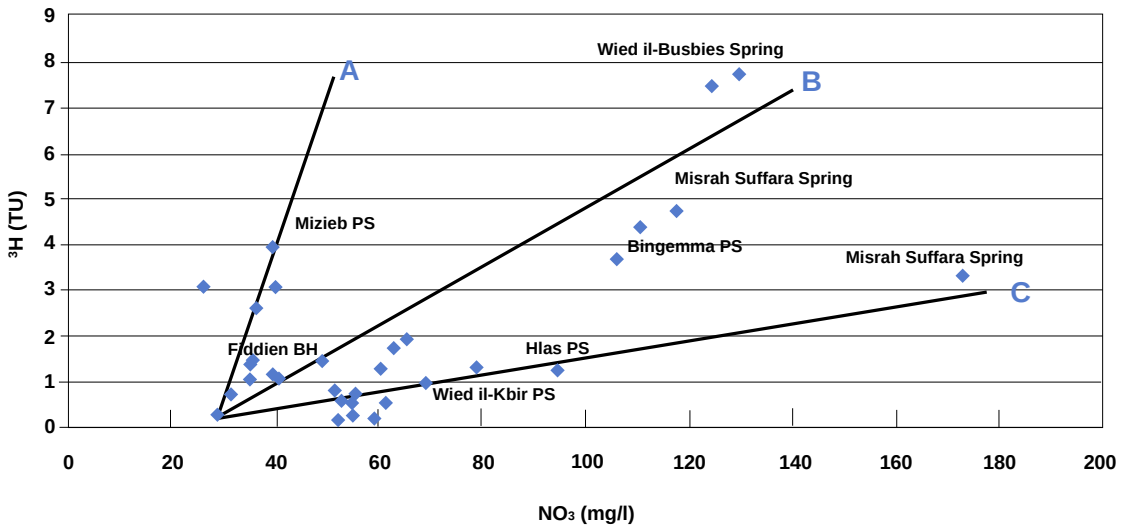


figure 10: ^{18}O vs Cl content in groundwater during 2001 - 2002 period from stations in Malta

proceeds in two ways: a slow component through pore matrix and a fast one through fractures. More data is needed to elaborate on this but a this stage we can point out that the correlation of ^3H and nitrates (NO_3) indicates three mixing mechanisms (Figure 11) between resident groundwater and recharge:

- Line A showing the mixing of low tritium groundwater with high tritium recharge with a relatively low NO_3 content.
- Line B showing the mixing of low tritium (old) groundwater with relatively recent recharge having higher tritium and moderate NO_3. This mechanism reflect the result of recharge conditions that characterise the mean sea-level aquifer underneath the Rabat-Dingli plateau.
- Line C showing the mixing of groundwater (recent) having low tritium content with a recharge that has high to very high NO_3 content.

The scenarios described above are due to the mixing of groundwater with infiltrations that are relatively high in nitrates derived from various sources. Animal wastes from farming practices and/or application of inorganic fertilisers are two possible sources. It is now planned to perform isotope analyses of dissolved nitrogen to pinpoint accurately the source of pollution and tailor our protection strategy on the results obtained.



Note: The mixing between NO3 and ^3H rich recharge water and long residence time groundwater occurs according to 3 different scenarios.

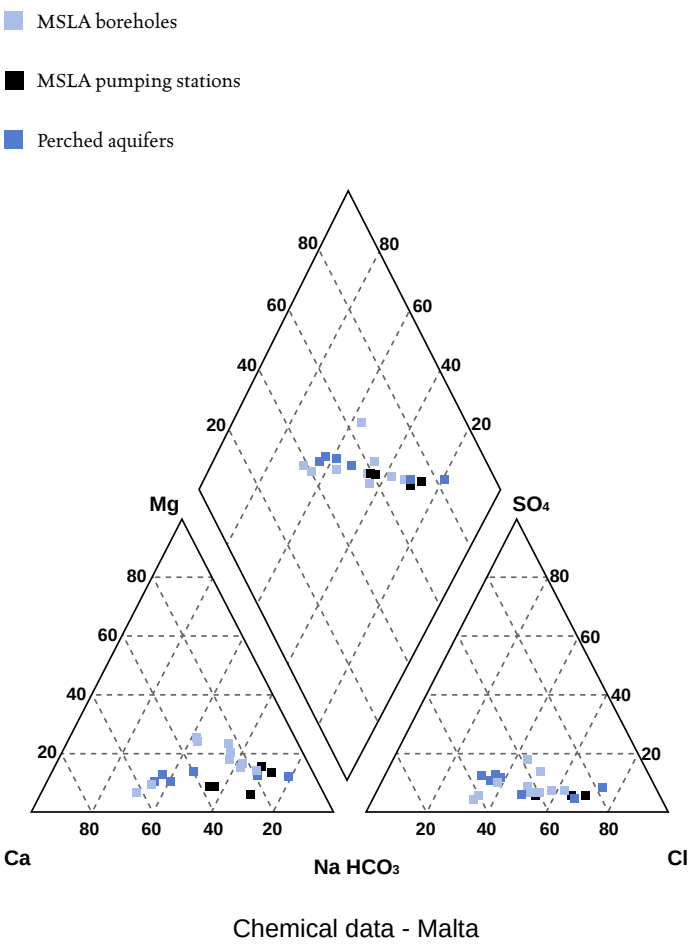
figure 11: correlation between ^3H and NO_3 content in groundwater

Fifth Framework Programme

The Directorate is currently participating in a number of projects under the EU Fifth Framework programme "Energy, Environment and Sustainable Development". These projects are outlined hereunder.

BaSeLiNe (Natural Baseline Quality in European Aquifers: a basis for aquifer management)

The BaSeLiNe project aims to establish criteria for defining natural water quality baselines and to develop a standardised European wide approach, which may be used in the Water Framework Directive. Such a standard, based on geochemical principles is needed to be able to assess scientifically the natural variation in groundwater quality, since existing limits may be breached by entirely natural processes. These criteria are also needed as a reference to be able to assess quantitatively whether anthropogenic pollution is taking place. The project also focuses on timescales influencing the natural processes and the rates at which natural processes are occurring. The extent to which pristine waters are being depleted by



As water flows through an aquifer it interacts with the chemistry of the geological strata and builds up a typical chemical composition. The possibility of mixing of groundwater with seawater can be investigated by means of a Ternary plot. Chemical data for groundwater is here classified according to the aquifers and sources. The plot shows that the groundwater samples from the perched aquifer are located at the left side of the plot. The nearest apex at this side of the piper plot indicates the presence of $CaMg(HCO_3)_2$ waters. Samples from the MSLA show a general shift towards the right with waters from pumping stations being more shifted than samples from boreholes owing due to higher chlorides indicating higher rates of more pronounced seawater intrusion. The apex at the right of the piper plot indicates NaCl waters. Thus the piper plot indicates that as a general rule, groundwater in the MSLA is shifting from the carbonate waters position towards the saline water position clearly confirming the mixing processes with seawater in the aquifer.

figure 12: piper plot groundwater chemical data from the perched aquifer and the MSLA

contaminated waters moving into the aquifer are also assessed. As well as giving the scientific framework, this project is providing a forum for discussion with policy makers and end users, including the utilities and the general public.

The existing project was originally being executed by a consortium of 11 groups from 9 European countries working together in nine work packages reflecting the required science and its application. Three newly associated countries (NAS), Malta, the Czech Republic and Bulgaria have been now integrated with the consortium to broaden the representation of the BaSeLiNe project in terms of country, European regions, type aquifers, and the different historical and political aspects relevant to water quality change.

The work packages currently being undertaken include an analysis of the methodology and approach to determine baseline properties, geochemical studies of different reference aquifers in Europe, assessments of quality trends, formulation of policy recommendations based on the results from the whole programme and interaction between end-users/policy makers from each of the consortium countries consulted throughout the project. The latter serves to determine links between the science and its application and in formulating recommendations, and promoting public awareness. Furthermore the project aims to promote a common approach to policy questions regarding groundwater affecting the implementation of the Water Framework Directive.

As Malta is aiming to comply with the EU Water Framework Directive, it will be required to monitor closer all water bodies for the purpose of achieving their good quantitative and qualitative status and of reversing any negative trends arising therein. Quality monitoring of wells and springs will be thus intensified to observe the chemical status of groundwater bodies and to keep track of trends. Through BaSeLiNe, MRA will be able to compare local monitoring practice with those of European countries and acquire from other organisations the necessary knowledge and experience to undertake improvements in monitoring.

Various geochemical studies have been carried out in the past and there are long time series of chemical data, recorded from 150 boreholes and 13 pumping stations, that are regularly monitored. BaSeLiNe foresees an analysis of historical and new groundwater data, using statistical techniques and graphical tools. This will enable easy evaluation by the end user.

WOISYDES (*Water Information System for Decision Support*)

This project involves a group of 8 partners from EU countries and newly associated states and aims to improve the existing MED-HYCOS (Mediterranean Hydrological Cycle Observation System) network of hydrological observation by upgrading the information systems and the regional database. It will focus on improving the international network of monitoring sites that will be harmonized and thus enabled to yield comparable data.

MEDA Proposal

MRA submitted a project proposal under the MEDA call. The project - Seawater intrusion and groundwater management in Mediterranean islands: A hydrogeological and socio-economic approach - will be coordinated by the French geological survey BRGM and will involve the MEKOROT water company of Israel, Ben Gurion University, CEVMER of Turkey, the Bodrum municipality of Turkey and BRC of Cyprus.

The overall objective of the study is to assess management practices for developing water resources in different Mediterranean islands and coastal areas with scarce water supplies. Focus will be made on integrated management practices and improvements in groundwater management in the Mediterranean region.

The project will also seek to improve cooperation between developed European countries and Mediterranean islands. Four case studies will be undertaken in Malta, Akrotiri, Rhodes and Bodrum all having issues and commonalities associated with scarce water resources.

Collaboration with the FAO

The Directorate will be commissioning a study that will chart the way towards a more modern and comprehensive management of groundwater resources. The study will include a revision of existing laws and the drafting of a new legal framework governing user rights over groundwater abstraction. FAO has approved a request by Government for expert support, and will finance a Technical Assistance project to provide the necessary consultancy. Different experts will analyse current groundwater policies and together with local staff will draft new groundwater policies and legislation.

Moreover the administrative capacity will be identified to enable the Directorate to follow the proposed legislation and implement its provisions. The project is expected to start by the end of this year and runs for a period of nine months.