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Current status of water sector restructuring in Malta

Medd, W and Marvin, S

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**New intermediary services
and the transformation of urban
water supply and wastewater disposal systems
in Europe**

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Working Paper
Current Status of Water Sector Restructuring in
Malta

Dr. Will Medd and Prof. Simon Marvin
Centre for Sustainable Urban and Regional Futures (SURF)
University of Salford, United Kingdom
Web: <http://www.surf.salford.ac.uk>
Email: w.medd@salford.ac.uk

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The Intermediaries Project:
**New intermediary services and the transformation of urban water supply and
wastewater disposal systems in Europe**

This report forms part of a wider EU Framework 5 project “New intermediary services and the transformation of urban water supply and wastewater disposal systems in Europe” is an EU Framework 5 project under the Programme Key Action “Sustainable Management and Quality of Water” (contract no. EVK1-CT-2002-00115). The project fills a knowledge gap on the current restructuring of the water sector across Europe by mapping the development of intermediary activities and organisations and assessing whether, in what ways and in what institutional and organisational contexts these services can accelerate the application of resource-saving technologies and social practices.

Reviewing the Accession States

The first work package of the project is a review of current status of water market liberalisation across Europe, providing an institutional backdrop for context-sensitive analysis of intermediary activities. More specifically our review focuses on the current status of the accession states. The comparative report and working papers for each accession state are available on the website.

Methodological Challenges

There are particular methodological challenges involved in reviewing the processes of restructuring across the accession states. There are relatively few academic or policy accounts of the processes of water sector transition in the accession states. There are also few secondary sources available through web-based and/or library searches. Consequently:

- There are few secondary sources documenting changes we can be used to clarify the validity of the findings
- Rapid change in some of the accession states means it is difficult to provide up to data and reliable information
- Large variability in the application of policies within countries means that careful consideration between intention and actuality must be taken

Given these source limitations each country report has also been reviewed by a country representative with expertise in the water sector and subsequently revised in response to their feedback.

Working Definitions

In order to allow comparisons of the Accession states the project has developed simple working definitions:

- **Liberalisation:** Reforming legal frameworks to permit and regulate competition in the water market.
- **Commercialisation:** Adoption of business management practices characteristic of the private sector in order to improve the efficiency, effectiveness and/or market position of a water/sewage utility.
- **Privatisation:** The transfer of ownership, responsibility or service provision from the public to the private sector.

Malta

Liberalisation

The water sector has not been liberalised. The Water Services Corporation Act (1991) grants exclusive rights to state owned public utility, the Water Services Corporation (WSC). As a monopoly WSC has exclusive rights for the acquisition, production, sale, distribution, exportation and disposal of domestic, commercial, and industrial water. The Malta Resources Act (2000) established the Malta Resources Authority as an autonomous and independent regulator with the function of regulation of treatment, storage, disposal, use or re-use of sewerage, waste-water, sludge, and storm water run off, provision of public sewerage systems, re-use of treated effluent and disposal of sewerage.

Commercialisation

The WSC has distinct management units - Corporate Services, Communications, Management Information Systems, Groundwater Operations, Gozo, Technical Support Services, Distribution Operations. WSC also has two subsidiary organisations with separate management (the Institute for Water Technology and Malta Desalination Services Ltd.). WSC also places increased emphasis on making efficiency gains (through metering, billing, reduction in leakage) and cost-cutting. Finally, WSC contracts out work where appropriate on a commercial basis.

Private Sector Involvement

Private sector involvement of water in Malta is limited because of the exclusive rights given to the Water Services Commission. However, private forms of provision are present in the form of private uptake from wells in the agricultural sector, private Reverse Osmosis polishing plants in, for example, hotels, and in large scale provision of bottled drinking water.

Country specific issues

Malta is classified as 'water scarce' with the lowest natural water resource per capita of the Mediterranean countries. Malta also has the highest government budget deficit of the accession states.

Future Trajectories

Water is perceived as a precious resource in Malta and there is widespread consensus that private sector involvement and liberalisation of the water and waste water sector should be limited. Instead, developments are likely to focus on improving efficiency gains (e.g. through further commercialisation, technological development and infrastructural investment) while addressing environmental concerns (e.g. improving use of second-class water).

The Status of Water Sector Liberalisation in Malta

1. Introduction

Two key challenges face the governance of the water sector in Malta. First, Malta is classified as 'water scarce' with the lowest natural water resource per capita of the Mediterranean countries. There is widespread consensus that water is a fundamental national resource that must remain the national ownership. Second, Malta has the highest government budget deficit of the accession states. There are therefore immense pressures to keep down the costs of government expenditure. Coupled together this creates a pressure to ensure that water is produced, distributed, consumed, and re-used in effective and efficient ways.

The governance of the water sector in Malta therefore has particular characteristics that mark the limits to liberalisation on the one hand, while also opening up possibilities for commercialisation on the other. While liberalisation processes, that is legislation opening up the water sector to competition, have to varying degrees been applied across different infrastructures in Malta, the perception of water as a precious resource means that exclusive rights have been granted to a state owned public utility, the Water Services Corporation (WSC). However the setting up of the WSC in 1991 as a separate company, and the structure of WSC - with distinct management units, subsidiary organisations, emphasis on efficiency gains and contracting out - are indicative of processes of commercialisation, that is processes of transferring business practices to the public sector. Further still, while privatisation of water in Malta is minimal because of the exclusive rights given to the Water Services Commission, private forms of provision are nonetheless present in the form of private uptake from wells in the agricultural sector, private forms of polishing plants check], for example in hotels, and in the large scale provision of bottled drinking water.

Technological developments in Malta are also important to consider. The success of the development of Reverse Osmosis (RO) desalination means that full capacity of RO infrastructure is not used. The urgency of water scarcity is therefore less than it

might be and yet this is coupled with the high energy usage needed for RO production, which thus incurs high expenditures. Indeed, in recent years, the WSC has incurred financial difficulties in relation to the RO plants. Another aspect of such technological development is the development of private RO polishing plant [check these/is this what they are?]. This is opening up new forms of private provision of water within the island that raises some questions about the legal validity of the monopoly status of the WSC.

Future developments of the water sector in Malta focus on improving efficiency gains (e.g. through further commercialisation, technological development and infrastructural investment) while addressing environmental concerns (e.g. improving use of second-class water). Key tensions within these developments involve the extent to which the WSC and the State are responsible/accountable for the cost of infrastructural investment and the claims made by private developers. For example, while the WSC is given monopoly rights to water, that private provision still remains and is indeed being further developed this raises challenges to the justification for the monopoly i.e. the monopoly is granted on the basis that water is a scarce resource and yet it appears – even if marginal – the monopoly is failing to meet water needs. Private provision may be seen to develop further.

Joining the EU will also have implications for the governance of water in Malta. Already in place are the organisational and policy arrangements for improved water monitoring ...

The report is structured as follows. Section 1 provides an introduction to the water sector, highlighting the development of the current infrastructure arrangements and the institutional organisation. Section 2 briefly overviews the general processes of liberalisation in Malta and then looks at the specific processes of liberalisation, commercialisation and privatisation. Section 3 highlights some of the key debate and influences in relation to the future trajectories of the water sector and summarises the report.

Status of Report

The report is based on secondary material through library and web-based research and has been subject to review by two country experts and changes made in response to their comments.

- Area of Maltese Islands: 316 sq. km
- Population: approx. 388,000 (projected 420,000 2015)
- Population Density: 1,200 per sq. km (8 times EU average) (+ 1.2 mill tourists per year)
- Agricultural land: decreased to 35% (less than 11,000 hectares) in last 50 years
- Built up area: increased from 7% to 21% (3 times EU average).

2 The Maltese Water Sector: Technology and Institutions

In order to understand some of the processes of liberalisation, privatisation and commercialisation, it is important to understanding some for technological infrastructure of the water sector and to give an overview of the institutional arrangements for its management. This section first gives an overview of the technical organisation of drinking water and sewage and waste-water. It then overview the institutional organisation of both drinking water and sewage and waste-water.

2.1 Technical Organisation

Drinking Waterⁱ

Malta is defined as 'water scarce' (per capita yearly fresh water resources are below 1000m³/cap/yⁱⁱ) and has the lowest natural water resource per capita of the Mediterranean countries. Malta is without rivers and lakes and the main sources of freshwater are from two aquifers, a perched aquifer (now primarily the source of

irrigation) and a mean sea level aquifer (MSLA) in which freshwater floats on top of the saline water. Since the 17th Century historically a variety of methods have been developed for the extraction, production, maintenance and distribution of potable water. These have included the development of: wells, boreholes, sterilization with chlorine, closing open channels, excavating connection and diving galleries, pumping stations, ground water drilling, desalination (by distillation, thermal flash and reverse osmosis)ⁱⁱⁱ. Currently the main sources of potable water are groundwater uptake from the MSLA (using boreholes (113), pumping stations (13) and springs(18) and desalination by Reverse Osmosis (RO) (4 plants - 3 seawater and 1 brackish). These two sources are blended (due to high nitrate concentration in the groundwater) and stored in 2 reservoirs. The reservoirs have capacity for 3 days of national supply though only approximately 50% of RO capacity is used^{iv}. In addition, there is the importation and production (with polishing plants) of bottled water and the production of water by on site commercial and domestic RO plants.

Box 4: Basic Data on Water, Wastewater and Sewerage^v

Potable water

- Yearly (August 2000 -July 2001): 33.5 million m³ (20)
- 50% Groundwater uptake, 50% Desalination (this varies, for example 1994/5, and at times in 2002, it was reported as 35% Groundwater and 65% Desalination). Only 50% of desalination capacity is reported as being used.
- Reservoirs hold approximately 300,000 m³ which is at least 3 days supply
- 2,200 km of pipe-work, 1,700k m service pipe-work, supplying 214,000 accounts

Sewerage and Waste Water

- nearly 100% of household connected (1000 households have cesspits emptied)
- 10% of sewerage is treated, the rest is disposed at sea
- Sant' Antnin Sewerage Treatment Plant produces estimated 2 million m³ of second class water.
- 8% of population connected to wastewater treatment

- 80% of treated effluent goes to irrigation, 20% to textile-manufacturing sector
- 6 second-class reservoirs which hold a total just under 12,000m³ which is about 1 day's supply.

Key Reports on Water Quality

- :Water Services Corporation (2000) Report on the Quality of Potable Water Supplied Consumers through the Public Distribution System in the Maltese Islands. WSC
- Axiak, V. and Summut A. (2002) The Coast and Freshwater Resources in State of the Environment Report for Malta 2002. Ministry for Home Affairs and the Environment. August.

Waste water and Sewerage

Nearly 100% of households are connected to the sewerage network (with 1000 households not connected who have cesspits emptied weekly) that is largely laid underground (moving with gravity and pumping stations in some locations). There are 3 main sewerage outfalls on both Malta and Gozo where untreated sewerage is discharged. There is one large-scale sewerage treatment plant (Sant' Antnin Sewerage Treatment Plant) that accounts for 10% of the sewerage^{vi} and this produces second-class water for use by industry and agriculture that is stored in 6 reservoirs. The sludge from this treatment is discharged at sea. Under the Structural Plan, 3 more plants are to be constructed closing three of four of the marine discharge outlets. There are also plans to develop treatment of animal waste (currently discharged into cesspits or illegally into the public sewerage system), and for sludge to be processed before disposal.

Drainage involves nearly 100% connection of inhabitants and enterprises . Though there are 6 reservoirs for second-class water (storing approximately one days supply), urban-waste water still largely goes into the sewerage system. Increased collection of storm water run off is planned, having been exacerbated by extensive development

decreasing impermeable areas. The aim is to maximise water use as well as decrease flooding. An urban waste-water treatment plant is also planned in Gozo.

2.2 Institutional Organisation^{vii}

Drinking Water

The Water Services Corporation is a state owned public utility company (established in 1991). Its mission is to 'achieve a more rational and economic use of water in the Maltese Islands through the maintenance of an equilibrium between supply and demand, and to support the general social and economic development while protecting the environment'^{viii}. WSC is responsible for the production and distribution of water in the Maltese Islands (see Box 5 for details of the WSC's exclusive rights'). Consisting of around 1200 employees the WSC has, following restructuring in 2000 and subsequent development, several units (Corporate Services, Communications, Management Information Systems, Groundwater Operations, Gozo, Technical Support Services, Distribution Operations). WSC also owns the Institute for Water Technology (IWT) and Malta Desalination Services Ltd. (see below).

The IWT was established in 1993 with the mandate to undertake research, development, investigation education and international exchange in the field of water related issues. Owned and funded by the Water Services Corporation, the Institute is under separate management with clearly defined domestic objectives as well as broader international mission within the Mediterranean, Europe and the Middle East. The Institute's primary objective is the development of the Corporation's workforce, but it also provides training facilities for the private sector.

MDS Ltd. 'produces' water by Reverse Osmosis desalination. It was set up in 1997 as a subsidiary of the WSC (taking over running of RO plants from foreign contractors) with the aim to 'design, build, operate and maintain Reverse Osmosis Plant and associated facilities in the most efficient manner, utilising the latest technology available, while respecting and protecting the environment' (see www.mds.com.mt).

Water is metered by individual tenement and the government gives a subsidy for the price of water to the WSC. The subsidy has been the lowest in the history of the WSC at Lm 10.067 but is likely to rise in the next financial year to accommodate increased wages and increased RO production^{ix}.

Box 5: Exclusive rights to the WSC^x

- Acquisition, production, sale, distribution, exportation and disposal of domestic, commercial, industrial and other purposes
- Conservation, augmentation and operation of water resources and sources of supply
- Functions related to water conservation, supply and distribution as may be deemed appropriate
- Treatment disposal and reuse as appropriate of sewerage and waste water
- Provision for the use of stormwater run-off and rural areas

Sewerage and Waste Water

The Ministry for Resource and Infrastructure (established on 1st March 2002)^{xi} has a wide remit concerning major infrastructure works and projects. Ultimately it is responsible for the WSC (which remains a publicly owned corporation). Its main operational unit is the Works Division within which is the Drainage Department^{xii}. The Drainage Department's main objective is to 'upgrade the existing sewerage network to the required level, so as to enable it to cope with both present and future demands, in the same time ensuring the maintenance and further development of the same'. In addition, the Works Division also has responsibility for the Sewerage Master Plan which has key goals of 'reducing direct sewerage outfall into the sea and increasing the availability of second class water for irrigation and industrial purposes'. Note while the Department does provide some services (treatment and distribution of 2nd class water to agriculture and industry (treatment located at Sant'Antin); emptying of legal cesspits, and sewerage extensions) private household connections are undertaken by a private Trenching Contractor

Regulation

The Malta Resources Authority was set up as an autonomous regulator independent from the corporations that provide resources. It took over the regulation function of WSC in 2001 (following MRA ACT in 2000). The MRA Act gives the MRA the function of regulation of treatment, storage, disposal, use or re-use of sewerage, waste-water, sludge and storm water run-off, provision of public sewerage systems, re-use of treated effluent and disposal of sewerage. Bathing water is the responsibility of the Environment Health Branch (Department for Public Health and Environmental Health Unit of the Ministry of Health) and the Environment Protection Department (of the Ministry of Environment). The former is responsible for bacteriological and viral parameters while the latter is responsible for monitoring physico-chemical parameters. Both departments are responsible for the quality of bathing water. Drinking water quality is the responsibility of the Public Health within the Ministry of Health, with both the division and the WSC monitoring drinking water.

Box 6: Key Legislation on Water, Wastewater and Sewerage

- **1972 Food, Drugs and Water Act:** prohibit the contamination of pollution of water from any source
- **1991 Water Service Corporation Act:** established the Water Services Corporation and its responsibilities.
- **1993 Sewerage Discharge Control Regulations (N8/93):** regulates all discharges into the sewerage system.
- **2000 Malta Resources Authority Act:** established Malta Resources Authority and its responsibility to regulate and monitor, all practice, operations and activities relating to water (including groundwater and storm-water), energy and mineral resources, with the obligation of formulating and implementing resource management strategies.
- **2001 Environmental Protection Act:** established Environmental Protection Authority and prohibits any discharge into the sea, disposal and dumping of certain substances on land without a written permit. This act, along with subsidiary acts, will implement most of the provisions of environmental acquis^{xiii}.

- **2001 Code of Police Laws:** makes it unlawful to discharge excess water from roofs or cisterns to the public sewer through overflow pipes or conduits.
- **Subsidiary legislation**^{xiv} various amendments have been developed to meet the Environment Acquis.

3 Existing status of water sector liberalisation in Malta

In this section the extent of liberalisation of the water sector in Malta is examined. First, it identifies more generally the status of liberalisation across different sectors of Maltese infrastructure. Second, it identifies some of the key issues and debates about liberalisation in Malta. Third, it identifies the specific issues of liberalisation, commercialisation and privatisation of the Maltese water sector.

3.1 Liberalisation in Malta^{xv}

Following a period of growing government activity from the 1970s to mid-1980s (including the nationalisation of private sectors)^{xvi} the first explicit signs of liberalisation began from the mid 1980s with concerns, ongoing today, about a large public sector budget deficit and the need to increase the quality and efficiency of the public sector. Processes of liberalisation involved putting into liquidation or selling off shares (full or in part) of government-owned firms and the better management of government investments. The 'Malta Investment-Management Company Limited' (MIMCOL) was set up in 1988 to manage, rationalise and monitor government investments.

The 1990s saw the transformation of some government departments into semi-autonomous agencies that would be accountable to parliament^{xvii} and in 1995 the Competition Act was introduced as a regulatory mechanism that aimed to ensure competition was effective and that competition was used as a form of price control. This involved establishing the Office for Fair Competition whose powers for intervention were strengthened in 2000.

In the late 1990s emphasis was placed on curbing private sector monopolies, on new management systems and 'pay as you go culture'^{xviii}. More recently the further pursuit of privatisation and liberalisation has varied across the utilities as follows^{xix}:

- **Telecommunications:** Telemalta was established as a parastatal corporation in 1974 with exclusive rights as the sole telecommunications operator. 1989 saw partial liberalisation. In 1998 the government sold 40% of Telemalta shares and the corporation became Maltacom plc.. The Office for Telecommunications Regulator was the new regulator (it later became Malta Telecommunications Authority). Malta Communications Authority was instituted early 2001 to facilitate the opening up of the market. In the mobile phone sector, Telecell Ltd. (who became Vodafone Malta Ltd in 1997) had exclusive rights from 1990, with Mobisile Communications Ltd (a subsidiary of Maltacom plc) joining the market in 1999. Radio was liberalised in 1991 (previously being under parastatal control). Cable television was liberalised in 2001 (previously this had been exclusive to Melita Cable plc.).
- **Postal Services:** between 1990-1998 management of the postal sector has changed 3 times with Maltapost plc. gaining an exclusive operating licence from 1998. To meet EU directives (97/67/EC) Maltapost is developing plans for an internal market of the postal services.
- **Energy:** Enemalta was established in 1977 (Enemalta Act 1997) as a parastatal corporation with a monopoly status over the generation, transmission and distribution of electricity and for the importation, storage and distribution of petroleum products. Under directives from the EU (96/92/EC), and with the status of 'small isolated system', while Enemalta's monopoly on trading fuel will be removed, an internal market within electricity will see the distribution functions (remaining as a parastatal monopoly) become independent from generation and ancillary functions for which competition will be opened up

In summary, the processes of liberalisation have involved varying degrees of commercialisation, part-privatisation, removing monopolies, liberalising markets and further (fuller) privatisation.

3.2. Key Issues and Debates^{xx}

The particular status of Malta in relation to its public sector deficit and geographical location mean that debates about liberalisation have a particular form.

At the core of arguments has been the continued government budget deficit. EUROSTAT reports that in 1999, Malta's external debt as a % of GDP was 227.7 which compared to the nearest EU candidate country, Cyprus, at 160.9%, and after that, Bulgaria, at 79.7%^{xxi}. Indeed, a series of reports commissioned by the Malta Labour Party in the 1990s highlighted that the major public enterprises (e.g. in the energy, water, telephone sector) had been accumulating losses and could be seen as technically bankrupt. Over-manning, the work ethic of the workforce and the effects of industrial action were all seen to contribute to public sector inefficiency. This was coupled with population growth that suggested the need to increase infrastructural capacity (projections suggest Malta's population of 388,000 will grow to 420,000 by 2015^{xxii}).

In response to this a set of arguments are put forward about the need for liberalisation, for the opening of markets.

Arguments were put forward that Malta needed to become competitive within the global market as a destination for investment. Similarly, arguments are made about the need to be innovative in the context of environmental limitations. Indeed, opening up the market is presented by some to enable this, particularly enabling technological developments. There are also arguments to develop more 'customer focused' forms of provision, including for example promoting a 'pay as you go' culture.

For example, the Christian Democratic Nationalist Party (Partit Nazzjonalist), in power from 1987 with a 2 year break in 1997-9, emphasising the self-government of Malta, have been the main political party driving processes of liberalisation.

Arguments presented for setting up autonomous organisations were first, to enable them to respond to the changing environment (for example being more customer oriented and responding to the demands of globalised competition), and second becoming more efficient, in particular, by addressing workforce capabilities (including the problems of ‘over-manning’). Such autonomy would allow autonomy over expenditure and recruitment in ways not possible for government departments.

Similarly, the Director General of Malta Federate in March 2002^{xxiii} argued about the importance of Malta within the global market place and the need for Malta to provide a “competitive destination for doing business”. He emphasises the importance of liberalising trade through privatisation (to save the States money), commercialisation (to ensure innovation and improvement) and competition (to optimise resources use) and that the role of regulator must remain separate to operator (whatever form of privatisation is taken forward). The Chamber of Commerce also supports privatisation and liberalisation unless there are socio-political needs for state ownership and control. The Malta Central Bank argues Malta needs access to international markets and that longer-term stability depends on being responsive to the modern economy and this requires market liberalisation^{xxiv}.

Interestingly the Malta Labour party, the opposition party who held office between 1997 and 1999 did not reverse processes of liberalisation. Indeed, during there period of office, and gaining support from the small business sector, pushed forward the liberalisation agenda to address problems of corrupt and prodigal issues of public tenders and monopolistic companies who had close relations to the PN. The ‘new management systems’ and ‘pay as you go culture’ were presented as a way to address this.

The second biggest union, Union Haddiema Mghqudin (UHM), which maintains non-political affiliation though is sympathetic towards the PN, argues for the need to recognise globalisation, the necessities of change and need for technological innovation. UHM supports joining the EU since it argues the EU will affect Malta anyway, and that while some public services need to maintain monopoly status, there is room for privatisation and the need to address the problems of the ‘work ethic’ in public corporations (including water) but that this need not involve job losses.

It is also important to note the significance of European Union Acquis. With the exception of water for which the EU has no competition criteria, and the granted status of Malta as a 'small isolated system' in relation to energy, EU acquis required meeting competition criteria. The NP have pushed for EU membership, applying in 1990 and reopening the application in 1999 (it had been frozen by the MLP in 1997). The argument put forward is that Malta is well positioned to act as EU-Arab States link and that Malta will be affected by the European Union whether it wants to be or not. The EU is seen as providing an opportunity to open up new market possibilities.

Interestingly the Malta Green party shares an interest in joining the EU because of the perceived benefits of some areas liberalisation. For example they support EU Directive 2001/77/EC to encourage the development of Solar and Wind energy while maintaining basic energy needs as a basic right^{xxv}. The EU is seen as a positive move, in part because of the inevitable dependency on EU markets and globalisation (though its route can be shaped), and also because of the benefits of funding, technical expertise and regulation for sustainability^{xxvi, xxvii}. However, AD argues the EU ought to become more democratic, sustainable and socially just^{xxviii}.

Arguments about the limits of liberalisation in the Malta have, however, also been made.

Socio-economic and geo-political circumstances are seen to require distinctly Maltese response to liberalisation, particularly with the limited economies of scale and small pool of expertise place. For example the EU grants Malta 'small isolated system' status in relation to energy that gives recognition to the limited possibilities for competition. For example, the MLP have opposed EU membership, preferring instead a close partnership arrangement while arguing that the Maltese government ought to respond to the nation's and its citizens' interests relating to its own particular socio-economic and geo political circumstances rather than being driven by larger EU directives.

There are also social concerns about the cost of living and problems associated in relation to rising charges, particularly in relation to water and energy. Concerns are

raised about job Losses involved in the privatisation of state companies are also significant. Some sectors, for example water and electricity, are seen to have particular socio- political needs for degrees of state ownership and control; they are seen as basic rights that the state must ensure are met.

For example, the General Workers Union (associated with the MLP) is Malta's largest trade union. It has a longstanding resistance to privatisation of essential public services, emphasising the importance of social issues and job losses^{xxix}, and also currently opposes joining the EU. It prefers instead that the state remains the sole owner of key services working in partnership with private sector partners where appropriate. The GWU has lead industrial disputes highlighting the problems of uncontrolled rises in costs of living, particular in relation to the National Airline and Freeport, but also impacting on the water sector, and has been influential in reducing the electricity and water charges. Interestingly in the case of the recent selling off of the governments shares of Mid-Med Bank in 2000 to the HSBC group, once assured that jobs would not be affected the union did not object.

Other significant arguments are also made. 'Alternnativa Demokratika – The Green party' advocate, for example, while arguing the case for liberalisation in the energy sector also argue for a combination of *state regulation* (for examples fiscal incentives/eco-taxes/penalties, national targets), *localisation* (for example involving local councils in waste separation^{xxx}, more *transparency* and *democratic representation* (they argue the current political system is based on 2 party dominance and that a wider array of organisations (from NGOs to consumer organisations) should be represented in public entities)^{xxxi}.

Box 2: Key General Actors in Drive towards Liberalisation

Political Parties

- Partit Nazzjonalistic (Nationalist Party): <http://www.pn.org.mt/>
- Malta Labour Party: <http://www.mlp.org.mt/>
- Alternativa Demokratika – The Green party: www.alternattiva.org.mt

Trade Unions

- General Worker Union: <http://www.gwu.org.mt/>
- Union Haddiema Mghqudin: www.uhm.org.mt/

Industry

- Federation for Industry: HERE
- Chamber of Commerce: www.chamber.org.mt

Government

- Malta EU Information Centre: www.mic.org.mt/
- Ministry for Economic Services: www.mes.gov.mt/
- Ministry for Resources and Infrastructure: www.mri.gov.mt

NGOs

- Friends of the Earth Malta: www.foemalta.org
- Nature Trust Malta: www.naturetrustmalta.org

3.3. Restructuring of the Water Sector

The status of Malta as water scarce gives a particular significance to the processes of liberalisation in the water sector. While there has been concern about the costs of the provision of water and water infrastructure, particular the high energy costs of RO, the extent to which this is addressed is set within the context of the perception of water remaining as a valuable resource. While this means that legislation gives exclusive rights to the Water Services Commission, thus ruling out liberalisation, it is nonetheless important to explore the ways in which there are aspects of liberalisation and certainly the strong sense of commercialisation and emerging forms of privatisation.

Liberalisation

The water sector has not been liberalised. The Water Services Corporation Act (1991) grants exclusive rights to state owned public utility, the Water Services Corporation (WSC). As a monopoly WSC has exclusive rights for the acquisition, production, sale, distribution, exportation and disposal of domestic, commercial, and

industrial water. The Malta Resources Act (2000) established the Malta Resources Authority as an autonomous and independent regulator with the function of regulation of treatment, storage, disposal, use or re-use of sewerage, waste-water, sludge, and storm water run off, provision of public sewerage systems, re-use of treated effluent and disposal of sewerage.

That said, however, it is of note that some competition is present within the water sector. First, there is the supply of bottled drinking water that remains a free market. Though the quantities of water consumed through drinking - even in the hottest countries – is small relative to the other habitual uses of water it is of note that the majority of drinking water is supplied in bottles. Indeed, few people will drink from the taps, not primarily for health reasons but rather the problems of taste because of salinity. The second area of competition is that there appears to be an emerging market for the supply of domestic technologies to purify water. These offer polishing possibilities in domestic settings and in larger complexes (most notably hotels) they offer the possibility of desalination thus enabling a more localised and reliable form of water supply. There are, for example, at least three suppliers in competition for the sale of domestic RO units within Malta^{xxxiii}. Further still, MDS Ltd. itself has entered into these competition activities. For example it has developed its opportunities to supply private RO units to hotels^{xxxiii} and has begun to work manufacture RO technology for an American Based Company ‘Ocean Power’ who are supplying particular types of energy efficient RO units^{xxxiv}.

For these reasons there has been discussion about the extent to which private forms of water supply do indeed infringe the claims made for the necessity of monopoly provision by the WSC. Indeed, the potential argument would be that since the monopoly is failing to meet all demand its very basis of being a monopoly, i.e. in order to ensure all demand is met, is undermined. Nonetheless, in fact, the EU reports that it is unlikely the granting of monopoly status does undermine competition law and the status of Malta as ‘water scarce’ and a ‘small isolated system’ appears to suggest that processes of liberalisation will remain on the periphery of the mainstream water provision.

Commercialisation

While the limits to liberalisation have been stressed throughout debate about the governance of the water sector the necessity for improving the efficiency of the water sector gained strength from the mid-1990s. As such the WSC was established as a company, though remaining public owned and various processes of commercialisation are now present:

- the WSC annual report, it is emphasised that the new Chief Executive was appointed based on his private sector management experience.
- the establishment of distinct distinct management units within WSC, namely, Corporate Services, Communications, Management Information Systems, Groundwater Operations, Gozo, Technical Support Services, Distribution Operations.
- WSC also report they are planning to generate a “Gozo Unit” as a strategic business unit within the WSC. The WSC as has two distinct subsidiary organisations which have their own management (the Institute for Water Technology and Malta Desalination Services Ltd.).
- There is also an emphasis on cost cutting. The emphasis here is on reducing money spent on overtime and shift allowance and the lowering of interest rates on bank loans).
- increased emphasis on making efficiency gains (through metering, billing, reduction in leakage). For example the WSC report (WSC 2001/2) they are developing onsite meter readings, communications technology (including discussion with mobile phone companies) and computers to improve metering (they have commissioned a report from a contractor for this). In addition they are developing Geo-coding (using GIS technology) so that information can be linked to every household. While the government continues to subsidise the cost of water, the intention is to lower this and it has been the lowest ever in recent years (dropping from a peak of over 16,000,000 Lm in 1996-7 to just under 7,000,000 in 2000-2001). Paralleling, and to some extent reflecting these changes, the WSC revenue has risen from just under 5,000 000 Lm in 1995/6 to just over 12,000 000 LM in 2000/01. (That said, rainfall shortages have lead to increased RO production the costs of which will in part be met by increasing government subsidy to just under 8,000,000 Lm)^{xxxv}.

- The WSC contracts out work where appropriate on a commercial basis. The WSC shares with the MRA^{xxxvi} an emphasis on contracting out work where possible and within a commercial imperative. Hence, for example, while the WSC currently contracts out drilling activities, it is refurbishing its old drilling equipment to ‘tap into this market’. Also, while the WSC contracted out to private contractors for road repair, following unsatisfactory performance with private operators, the WSC has now established contracts with local councils.

Privatisation

The monopoly status of the WSC limits the extent to which there is privatisation in the Maltese water sector. Nonetheless private forms of provision are present. In terms of payment, indirectly – and on a scale difficult to assess – individual households are metered for the water supply, and this not only introduces a form of informal privatisation (as the state subsidy in principle reduces). This also means there is some ‘competition’ if people are consuming bottled drinking water due to its superiority over tap water. Consideration of privatisation must also make note of the private uptake and production of water. Private uptake is most notable within the agricultural sector and this has raised concerns about the need for increased regulation of this area due to the decreased water quality of the aquifers (UU paper). More recently there has been the development of private reverse osmosis units, for example in some of the major hotels, the Eden Ice Arena and as well as domestic RO units^{xxxvii}. There have also been private developments in water conservation strategies as exemplified by STMicroelectronics^{xxxviii}.

Hybrid

An important aspect of the process of liberalisation, commercialisation and privatisation in Malta is not only the *limits* that the issues of water scarcity place on the governance of the sector but also the ways in which innovative *hybrid* forms are emerging combining in different ways aspects of liberalisation, commercialisation and privatisation. This is illustrated in box 7.

Box 7: Aspects of a hybrid water supply

The Water Service Corporation, a state owned corporation, is responsible for the water uptake, production and distribution and is monitored by the Malta Resources Authority (MRA), a state regulatory body. The WSC owns a limited company that produces potable water through Reverse Osmosis, Malta Desalination Services Ltd (MDS). In some cases water produced through RO has been blended with groundwater and is stored in reservoirs owned and run by the WSC. Consumers are billed and pay for their water supply. The government subsidises the WSC to keep the water tariffs low. When rainwater levels are low, as in recent years, there is increased demand for RO water production that now accounts for approximately 60% of the water supply (previously it has been nearer 50%). RO has high production costs and while energy savings have kept down the costs despite increased production, increased state subsidy is now reported to be required. State subsidy has also increased in part, the WSC suggest, to account for an increase in wages arising from a collective agreement with the General Workers Union^{xxxix}. The WSC is also in a position of buying unused and wasted spare parts from MDS, thus bearing the costs in order to avoid MDS becoming bankrupt^{xl}. RO technology has is also being developed by a range of companies – including MDS – for the onsite production of private company, hotel and even domestic supply.

Regulation

Another important aspect of the emerging trajectory is the increased regulation that is evident. This is reflected in a number of ways: the setting up of the MRA as a regulatory body; the increased human resources within environmental health branch of the Ministry of Health; establishing the National Commission for Sustainable Development under the Environment Protection Act 2001.

4 Emerging Trajectory of the Water Sector

This section examines the future trajectory of the water sector in Malta and some of the key debates that will be important in determining water governance in Malta. As is clear from the previous section, there is not a simple, linear direction towards liberalisation of water in Malta and it is important to consider the debates that are being played out.

4.1 Key Debates

There are a number of key concerns that are likely to influence the development of the water sector:

- **Economic.** These evolve around the efficiency of the WSC operations (including staffing^{xli} and water loss), problems of supply affecting industry and tourism^{xlii}, the high energy costs of RO production (said to use about 8% of total energy use in Malta), failure at attempts to promote rationing^{xliii}, consumer tariffs not being seen to reflect the true costs of water supply; and lack of use of second-class water which could create savings in RO production^{xliiv}; the debt of the WSC to banks (Lm 32.6 million) and to government Lm4 million (down by 1.3 million at the end of 2001)^{xlv}
- **Environmental.** A number of issues are seen as particularly important. There are concerns about waste: high energy usage of desalination^{xlvi}; leakage in the system; poor use of second class water^{xlvii}; consumption patterns; increased demand for sewerage^{xlviii}. There are also concerns about drinking water quality: in particular high nitrate from groundwater and high chloride levels in desalinated water^{xlix}. Bathing water is also a concern, including the impact on different social groups¹.
- **Social.** The main concerns are: the standards of living and pay and have concerns about rising costs of tariffs; the reliability of the water supply^{li}; differential seawater quality in different areas
- **Political.** There is a general consensus that the limits of economies of scale, the limits of expertise and the importance of water as a social good means there should be limits placed on liberalisation of the water sector. Concerns

raised are more about ensuring the role of the regulator (MRA) is maintained as independent from the supplier (WSC)^{lii}.

4.2 Key influences

Emerging in relation to these debates seems to be three areas that are worthy of particular consideration.

Accountability and Responsibility

First, there are issues of liberalisation and concerns about *accountability and responsibility* in the water sector. Two scenarios about ‘spare parts’ and ‘power cut off’ are particularly illustrative (see below)^{liii}. While the story of ‘MDS Spare Parts’ illustrates the limits of commercialisation and privatisation and the problem of establishing responsibility for wasted expenditure, the ‘Power Cut in Pembroke’ highlights further complications about the interdependencies between water production and energy and the different possibilities for establishing continuity of water supply which requires a combination of political, organisational and technological coordination.

Box 6: Accountability and Responsibility

MDS Spare Parts

The Times (21st August) reports the WSC were considering buying “worthless” stock to save the MDS subsidiary from bankruptcy. It reports that talks are underway between the Finance Ministry and the WSC for WSC to buy and write off spare parts from MDS (on the advice of the auditors), at a value of approximately Lm600,00. The spare parts were bought when MDS was set up in 1997. The chairman of WSC is reported to say that the spare parts were bought by the board under a Labour government. They were intended to be used for maintenance of RO plants. He is reported to have said nothing could be done about this until now when it has become clearer that the spare parts were unnecessary. An MLP MP (24th August) points out, however, that the Labour administration set up the MDS and saved money that could have otherwise gone to a foreign private contractor rather than WSC. The spare parts

had been for particular pumping stations and that they are legacy of a changed to pumping stations instituted when the PN was in power.

Power Cut in Pembroke.

On Wednesday August the 7th, 2002, water cut-off was experienced by people in and around the tourist areas of Valletta, Sliema and St Julian. For most areas water was reconnected on the Friday morning, for some the Saturday morning. The cut-off was due to the closedown of Pembroke Reverse Osmosis plant, due to a power failure resulting from a fault in a principle 33kV cable that runs underground between Marsa and Paceville. The cable is the responsibility of Enemalta. However, residents are reported to have said that the Pembroke RO plant shouldn't be dependent on Enemalta while the WSC said the huge energy requirements of the plant made this impossible (Herman Grech, The Times, 10th August 2002). An MLP MP reports (The Times, 19th of August, 2002) the disappointment expressed by the Association of General Retailers and Traders and the Malta Hotels and Restaurants Association about the cut-off. The MP argues that while the power line is not the fault of WSC, a "large reservoir hold three/four-day supply of water should be built and supplied with water from the Pembroke plant ... to ensure continuity of supply". He argues that the previous Labour administration had been in the process of implementing such a reservoir on a site in Xwieki for which a development application had been submitted. The project was halted, however, by the incoming National Party in 1988. He argued that with this reservoir in place further plans were to connect all the large reservoirs together to enable continuity of distribution should supplies by cut in particular areas.

Technological Developments

Second, there are important issues about the implications of technological developments. There are a number of areas of particular development that have implications for the development of water sector liberalisation. First, as has been noted is the rise in commercial and domestic RO polishing plants. These can be understood as a form of private water production and they also open up this form of

water supply to competition as is evidenced by the different suppliers to Malta of domestic RO plants, including developments by MDS Ltd. itself. Secondly, and this links to the first, is the development of different forms of energy supply for RO plants. The development of, for example, solar power for RO could reduce the costs of domestic/commercial production^{liv} which might increase competition. The RO units designed for large hotels, for example, are said to have a lower energy usage. Third, is the development of second-class water technologies. This refers in part to developments in terms of collection of water run off, development of polishing plants, sewerage treatment plants and also to devices that recycle water on premises (consider for example STMicroelectronics). Again, this has implications for opening the market in terms of technology but also forms of supply. Finally, there are developments in demand management, in particular, attempts to minimise leakages that also have implications for billing (for example using GIS and telecommunications to improve metering).

European Union

Third, there are important issues about the consequences of joining the European Union. EU membership would involve implications for high levels of water monitoring, in relation to drinking water quality and environmental standards^{lv}. It also has implications for the construction of waste-water and sewerage infrastructure^{lvi}. Becoming a candidate country has already required Malta meets key competition criteria^{lvii}, for example in Telecommunications and Fuel (although Malta is granted status as a ‘small isolated system’ in the case of electricity because of the limited opportunities for competition (for example by connecting up to other networks))^{lviii}. In relation to water there are also some influences although these are minimal. Because water is seen as a “service of general economic interest”, that competition rules would “obstruct the performance in law or in fact”, and that the development of trade could be “contrary to the interests of the Community”, the WSC status as a monopoly is unlikely to be seen as contrary to EU law^{lix}. What may be significant here, however, is the implications for the role of the WSC and 3rd party water provision that is currently evidenced (for example private boreholes, farm wells, water tanks, RO units, drilling) which imply limits to the extent to which the WSC as a monopoly is adequately providing for need^{lx}.

Environmental Concerns

Finally, important to future developments are environmental concerns. Important to the development of this emerging trajectory will be the Structural Plan (2000-2010) which is currently under consultation and aims to 'increase the quality of life in Maltese Islands by social and economic development and environmental stewardship, within a framework for sustainable development'. The plan is exploring different future growth scenarios being evaluated by transport-demographic modelling and strategic and environmental assessment^{dxii}. The question here will be the extent to which liberalisation will be limited by limits to growth but also the extent to which environmental concerns might be addressed by new technological developments that are enabled by opening up particular sectors to competition, as argued by AD and the NGOs.

Future Trajectory

The economic, social and political context of the Malta is one in which liberalisation of the water sector is very unlikely to be introduced. That said, challenges to the orthodox opinion are potentially there in terms of the already existing private forms of water supply (from agricultural abstract to bottled drinking water). While these forms of provision suggest that justification of monopoly provision is problematic, that is because the monopoly is failing to provide for all water needs, hitherto these are seen as marginal and not likely to disrupt the widespread view that water must remain a precious national resource. Water scarcity coupled with Malta being a 'small isolated system' suggest then that liberalisation is not an option.

Form of privatisation are, however, emerging. Already mentioned are the informal abstraction in the agricultural sector and the widespread use of bottled drinking water. In addition, technological developments enabling private forms of supply are seen as worthy of investment by hotels wanting to ensure acceptable and reliable levels of water supply, particular for the tourist trade. The extent to which technological developments will lead to further privatisation remains to be seen and in part will co-evolve in relation to improvements made in the general water supply managed by the WSC.

In relation to the general water supply the main impetus is on forms of commercialisation. There are explicit attempts at introducing commercial practices into the management of the WSC and its subsidiary units. How far this might be developed, for example contracting the operation of RO desalination units to private sector companies remains to be seen. Certainly there are no public discussions of this possibility.

5. Summary

The aim of this report has been to characterise the current status of liberalisation of the water sector in Malta with a view to identifying key issues in relation to future trajectories. Water scarcity in Malta means that while water is perceived as a scarce resource and potentially subject to strong competition, its status as an important social right as well as its role in the economic infrastructure is such that there has been a general political consensus that liberalisation should be limited and water production and supply be the responsibility of a monopoly provider, the Water Services Corporation. There have however been various aspects of commercialisation, privatisation and liberalisation in different forms, as well as continued government subsidy, EU grants for infrastructural developments and regulation (for water quality and the environment). It seems likely that future developments will see further kinds of commercialisation (for example developing further business units within the WSC), privatisation (for example linking tariffs to costs as well as private RO water supply), liberalisation (for example competition for private RO plants) and regulation (for example to meet EU criteria). Important to understanding the possibilities of the future trajectory is technological development. The success of RO as well as developments in waste-water recycling suggest that the scarcity of water is no longer such an issue. Coupled with new demands from the EU for drinking water quality new avenues for the water sector may well open up. So while in the near future little radical change can be anticipated in the water sector there may well be new possibilities opening up in the longer term.

ⁱ Main sources for this section unless otherwise referenced: Axiak, V., V. Gauci, et al. (2002). State of the Environment report for Malta. Malta, Ministry for Home Affairs and the Environment and Bonello, B (2002) Utilities Topic Paper. Draft for Public Consultation. MEPA

ⁱⁱ See also: <http://www.cnie.org/pop/pai/water-14.html>; Bremere, I., M. Kennedy, et al. (2001) "How water scarcity will effect the growth in the desalination market in the coming 25 years." Desalination 138: 7-15.

ⁱⁱⁱ See: WSC (2002). Evolution of Water Production in Malta. Malta; Riola, A. (2001). "Maltese experience in the application of desalination technology." Desalination 136: 115-124.

^{iv} Note that while these 2 reservoirs have approximately 3 days national supply the reservoir system does not connect to all areas of Malta and hence some areas are dependent on direct production from RO.

^v Key source: WSC (2002). Annual Report 2001-2002. Malta, Water Services Corporation; Bonello, B. (2002). Utilities Topic Paper: Draft for Consultation, MEPA.

^{vi} A treatment plant which began construction in 1982 was never completed due to recession at the time and subsequently became in a state of disrepair.

^{vii} Key Source: WSC Annual Reports (1999/2000, 2000/2001, 2001/2002)

^{viii} WSC (2002) Annual Report www.wsc.com.mt.

^{ix} The Times (2002) WSC workers selling more water even as productive decreases, 27th November

^x Source EUROPA (2000). The Impact of EU accession on Water Services Corporation, Water Services Commission.

^{xi} www.mri.org.com

^{xii} The other departments are: 1) The Pumping Stations and Sewerage Treatment Plant Section has the role to : 'provide reliable continuity in wastewater recycling services, through the efficient installation, operation and maintenance of plant. This section is responsible for the proper operations of all Drainage Pumping Stations in Malta, and the Sewerage Treatment Plant at Sant' Antnin, M'Scala'. 2) The Work Section is mainly for "extensions and upgrading of the Malta Sewerage Network. 3) The planning Section provides architectural, structural and engineering services to the various units within the Drainage Department. 4) The Discharge Permit Unit aims "to protect the Sewerage Treatment Facilities and Sewerage system by offering the necessary scientific (Chemical, Biological and Biochemical) advice to prevent certain contaminants from reaching the sewerage system'. As well as providing such advice it also has a role is to regulate, monitor and enforce. 5) The Maintenance Section is responsible for upkeep of the sewerage network (including 950 cesspits from households which are not yet served with a sewer).

^{xiii} Source: EMWIS (200?). Summary of Position Paper on Environment - Water Quality.

^{xiv} See http://www.mra.org.mt/water_legislation.shtml for more information on subsidiary legislation

^{xv} The main source for this section unless otherwise indicated is: Philip von Brockdorff (1996) "Privatisation in Malta: Opting for the middle road" Public Policy and Development, 2 (July-December)

^{xvi} The 1970s and 1980s saw government activities rising through taking "control of key sectors of the economy and restricted imports through higher tariffs, quotas and non-tariff barriers. As the government attempted to take full control of key areas of economic activity, public sector employment grew in government departments and state-owned enterprises. Such enterprises comprised of private monopolies and oligopolies (for example telecommunications, airline services and commercial banks) that were nationalised, becoming public monopolies and oligopolies in an attempt to take full control of key areas of economic activity". Consequently investment in the private sector took place mainly in tourist and

retail trades. (Philip von Brockdorff (1996) "Privatisation in Malta: Opting for the middle road" *Public Policy and Development*, 2 (July-December))

^{xvii} In addition to Water Services, for example, were the Air Terminal, Employment and Training Agency, and Maritime Affairs.

^{xviii} For example water and electricity charges were increased.

^{xix} Source: Bonello, B (2002) Utilities Topic Paper. Draft for Public Consultation.

MEPA

^{xx} Key source in this section: Fenech, D. (2001) 'Malta' *European Journal of Political Research*, 361-364 (40); (2000) 'Malta' *European Journal of Political Research*, 458-461 (38); (1999) 'Malta' *European Journal of Political Research*, 457-463 (36); (1998) 'Malta' *European Journal of Political Research*, 465-470 (34); (1997) 'Malta' *European Journal of Political Research*, 439-445 (32); (1996) 'Malta' *European Journal of Political Research*, 411-414 (30).

^{xxi} Source: EUROSTAT (2001). EU Enlargement. Key Data on the Candidate Countries. Luxembourg, Eurostat.

^{xxii} Source: EMWIS (200?) Summary of Position Paper on Environment - Water Quality

^{xxiii} Calleja, E. (2002) 'Managing the Transition from a Department of Government to a Regulator', address to conference (title?), organised by Inst. of Public Admin. And Management with Staff Development Organisation. 15th March
http://www.mra.org.mt/Downloads/Presentations_and_speeches/Speech_020315_Regulation.pdf

^{xxiv} Central Bank of Malta:

<http://www.centralbankmalta.com/site/pr1main.asp?ItemID=241>

^{xxv} AD (2002) Position Paper on the Development of a Strategy for the Exploitation of Renewable Energy Sources for Electricity Generation

<http://www.alternattiva.org.mt/>

^{xxvi} Alternattiva Demokratika – The green party Position Paper on Waste Management: comments on project description statement, 20th May 2002,
<http://www.alternattiva.org.mt/>

^{xxvii} See for example Media Release (26-11-2002) "Oil spill disaster: Malta has a constructive role to play" in which AD argue joining the EU will strengthen the EU's influence on the International Maritime Organisation who regulate shipping; Malta having the 4th largest merchant fleet in the world.

^{xxviii} Alternattiva Demokratika – The green party Position Paper on Waste Management: comments on project description statement, 20th May 2002,
<http://www.alternattiva.org.mt/>

^{xxix} GWU Privatisation in Malta www.gwu.org.mt/privatisation_e.html

^{xxx} Alternattiva Demokratika – The green party Position Paper on Waste Management: comments on project description statement, 20th May 2002,
<http://www.alternattiva.org.mt/>

^{xxxi} Comments on the Malta Draft Report on Sustainable Development for Johannesburg Earth Summit, 7th June 2002 <http://www.alternattiva.org.mt/>;
Briguglio, M. The Greens Civil Society and democracy, www.timesofmalta.com 1/12/02

^{xxxii} For example DE & SO SPRINGWATER Domestic reverse osmosis units E-mail: vassallod@global.net.mt; FM Environmental (Malta)

www.fmenvironmental.com.mt; Tua engineering Ltd [ww.tuaend.com](http://www.tuaend.com)

^{xxxiii} See the Malta Independent 17th July 2000

(<http://www.archive.independent.com.mt/2000/0717/b06.htm>)

^{xxxiv} See www.business-line.com/business-weekly/archives/330/02.htm.

^{xxxv} Times 27th November 2002 'WSC selling more water even as production falls'

^{xxxvi} For example it is exploring the possibility of contracting out monitoring activities (MRA (2002) Response to the consultation on the implementation of the Water Framework Directive, www.mra.org.mt/Downloads/Consultations/Response_to_WFD.pdf)

^{xxxvii} Bonello, B. (2002). Utilities Topic Paper: Draft for Consultation, MEPA; also <http://www.archive.independent.com.mt/2000/0717/b06.htm>; The Malta and Financial and Business Times, The Eden Ice Arena's Green Machine 8th August 2001; there are various domestic supplies (example DE & SO SPRINGWATER Domestic reverse osmosis units E-mail: vassalod@global.net.mt; FM Environmental (Malta) www.fmenvironmental.com.mt; Tua engineering Ltd www.tuaend.com)

^{xxxviii} See www.st.com/stonline/company/environment/report99/enrep2.htm. STMicroelectronics report a range of interventions to reduce their water consumption, namely, recycling

^{xxxix} Source: The Times WSC selling more water even as production falls, 27th November 2002

^{xi} "WSC considering buying worthless stock to save MDS subsidiary", The Times August 21st

^{xii} Indeed, the Malta Times reports (August 7th 2002) that the WSC has agreed to gradual increases to wages and that (November 27th) this will contribute to a rise in the government subsidy to the WSC.

^{xiii} Most recently, for example, see Water plant shutdown hits consumers in 24 localities The Times, Friday August the 9th,

www.timesofmalta.com/core/print_article.php?id=106498

^{xiiii} Riola, A. 2001 Maltese experience in the application of desalination technology Desalination 136 (115-124) www.elsevier.com/locate/desal

^{xv} See for example 'How to avoid half truths' The Times, August 24th 2002

^{xvi} Reported in the Times (2002) WSC Deep Debt, November 13th

^{xvii} Research is exploring possibilities for alternative forms of power, for example Solar Desalination (see Institute for Environmental Technology, www.um.edu.mt/ietmalta).

^{xviii} MRA (2002) Response to the consultation on the implementation of the Water Framework Directive, www.mra.org.mt/Downloads/Consultations/Response_to_WFD.pdf; this includes concerns about land development

^{xix} There is a particular concern with houses being converted to flats increasing the number of users.

^{xx} For example see 'Drinking Water in Mosta' The Times October 1st 2002

ⁱ Axiak, V., Pavlakis, P., Sieber, J., Tarchi, D. (2000) Re-assessing the Extent of Impact of Malta's (Central Mediterranean) Major Sewerage Outfall Using ERS SAR Marine Pollution Bulletin 40 (9) 734-738

ⁱⁱ The WSC Annual report for 2001/2 successful at maintain water supplies with use of RO plants (from 50 to 60% of water supply) went 'unnoticed by the public'; however in 2002 there have been are shutdowns because of problems with the energy supply (see Water plant shutdown hits consumers in 24 localities The Times, Friday August the 9th,

www.timesofmalta.com/core/print_article.php?id=106498)

ⁱⁱⁱ See for example Calleja, E. (2002) 'Managing the Transition from a Department of Government to a Regulator', address to conference organised by Institute of Public Administration and Management, and the Staff Development Organisation, 15th March 02, http://www.mra.org.mt/Downloads/Presentations_and_speeches/Speech_020315_Regulation.pdf

^{iv} In the waste sector, for example AD point out that the tender for implementation of the waste strategy was issued before the formulation of the strategy itself.

^v See IET: www.um.edu.mt/ietmalta

^{vi} This is also reflected, for example, in the Ministry of Health planning to increase human resources within the environmental Health branch. The EU seems to influence then the role of monitoring, for example Malta has set up the National Commission for Sustainable Development (under the Environment Protection Act 2001) which has been set up to implement the EU environment Acquis. See

Dimech, Zammit 2001 EU Environmental Water and Waste Legislation. No. 1833, EU Environmental Water and Waste legislation, TAIEX (in framework of Maltese Business Week). http://www.foreign.gov.mt/pr/docsgov/2001/pr051201a-FZ_Dimech_TAIEX-doi1833w.pdf

^{lvi} MIC (1999) MALTA-EU Position Paper - Chapter 22 Environment
www.mic.org.mt/MALTA-EU/position_papers/chap_22.htm

^{lvii} Sources: Competition Policy (MALTA-EU Position Paper) -
www.mic.org.mt/MALTA-EU/position_papers/chap_06.html); Busuttil, S.(2000?) "Q &A on Water and Electricity"

www.mic.org.mt/EUINFO/qeua/q&a37.htm; Bonello, B. (2002) Utilities Topic Paper: Draft for Public Consultation, MEPA,
http://www.mepa.org.mt/spr/topics_Uilities.htm; ECO(Tech) (2001) The Benefits of Compliance with the Environmental Acquis for the Candidate Countries
<http://europa.eu.int/comm/environment/enlarg/benefit.htm>

^{lviii} Busuttil, S.(2000?) "Q &A on Water and Electricity"

www.mic.org.mt/EUINFO/qeua/q&a37.htm

^{lix} EUROPA (2000). The Impact of EU accession on Water Services Corporation, Water Services Commission.

^{lx} The issue here is that being granted monopoly status depends on it being show it needs to be a monopoly to provide for needs.

^{lxi} Bonello, B. (2002). Utilities Topic Paper: Draft for Consultation, MEPA