

# Drying up our Future?

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Due to its size and scarcity of resources, Malta faces a host of environmental and economic difficulties; from urbanisation to over-fishing to over-population. Amongst these difficulties, we find a crisis. A crisis that poses what can be termed as one of the most influential problems in our society today; a water crisis.

Since Malta is an island with no lakes, rivers or other surface water bodies, we get our water supply from a number of underground aquifers – our source of groundwater. Reverse Osmosis Plants - which change salt water into fresh water provide another percentage of our potable water. We access the groundwater via boreholes that pump up water which is then used to provide 40% of our town water supply, by farmers for agricultural use and used also by households as well as for commercial purposes.

The first boreholes in Malta were installed by the government in the mid 1970's and since then, numbers have been on the rise; from 150 government owned boreholes<sup>1</sup> to over 3,000 registered ones owned by various farmers and commercial entities nowadays. In addition to this it is believed that there are a multitude of boreholes<sup>2</sup> which are not registered with the Malta Resources Authority (MRA) meaning the government has no knowledge of their existence. Contrary to many

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<sup>1</sup> Then Water Works, now Water Services Corporation.

<sup>2</sup> The exact number is unknown.

schools of thought, the registration of a borehole, doesn't make the borehole legal, but is simply indicating to the MRA that water is being extracted from such a source. Water continues to be extracted through registered and non-registered boreholes on a daily basis – but especially in summer – to the tune of millions of cubic meters a year, which is then depleting our groundwater resource.

According to hydrologist Marco Cremona, the sustainable level of extraction from the aquifers in Malta is calculated to be around 25 million cubic meters per year. However, he explains that as of now, over 40 million cubic meters per year are being pumped – and even more during years of low precipitation as was the case in 2015/2016. He believes that the amount of water that is being privately extracted from the boreholes is more than the amount of water being extracted by the Water Services Corporation through its boreholes and the Reverse Osmosis Plants put together. He explains, that because we as a nation are extracting close to double the sustainable yield, this practice is impacting negatively the aquifer in a number of ways. Firstly, the quality of water from the aquifer is deteriorating through an increase of salinity levels.

Since our main aquifers are at sea level, when fresh water is pumped up, sea water begins seeping through the permeable rocks and replaces the freshwater being extracted. Because of this, the groundwater becomes unfit for irrigation, let alone as potable water. This may result in WSC gradually abandoning its groundwater sources, and having to replace this source of fresh water through increased use of desalination by reverse osmosis.

This in turn costs around eight times as much as it does to pump the water from the aquifers.

Secondly, the absence of clear and effective regulations and policies in the extraction of water and the negative trend in rainfall thresholds makes us too dependent on the Reverse Osmosis plants, which creates a heavy burden on Government in terms of costs. Some studies have shown that farmers may be extracting over 29 million cubic meters per year, which is already more than the sustainable yield. Furthermore, farmers are unable to use the salt-water as it damages crops, meaning that unless the water is desalinated, it cannot be used. This creates a situation wherein the cost of the agricultural produce become more expensive. That said, since pumping water from an aquifer remains completely free-of-charge, there is little motivation to use water wisely and select crops that need less water.

Maltese citizens who own boreholes, only pay for the electricity involved in pumping water as no charge is administered on the actual water itself. This again results in many people extracting more than is needed and in turn depleting our supply in higher proportions compared to what is really required. In addition, Cremona adds that putting a fixed price on groundwater being pumped from boreholes in different locations may be complicated, because the quality of the water differs from one borehole to another.

This creates a difficult situation in creating a pricing policy for water pumped from the aquifers since the quality of the water differs from one geographical region to another. There are also arguments in favour and against imposing different tariffs depending on the use/user of the water. Another argument centres around the fact that whoever drilled a borehole illegally and subsequently registered the borehole may have the competitive advantage on who did not drill a borehole and therefore did not benefit and cannot benefit from a cheap water supply.

In the event that the groundwater supply of water is depleted, the Maltese Islands will become completely dependent on the Reverse Osmosis Plants (RO Plants). Currently the reserves of town water in WSC reservoirs would only provide 2 days of water supply if the RO plants malfunction or if they are hit by a natural disaster or sabotage. In the Maldives, this catastrophic eventuality has been experienced in 2014<sup>3</sup> and the Government of the country had to send planes to India to bring in bottled water until such time that the RO plants were back to use.

Therefore, for strategic reasons it is vital for the Maltese to have the fall back of the water supplied from the aquifers, yet with the amount being extracted, Cremona doesn't believe they'll be around for long.

He says "It has taken us fifty years to destroy it [the water table] and it will take more than fifty years to get it back in its original state." As a country in the EU, we have an obligation to restore our aquifers to their

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<sup>3</sup> <http://www.waterworld.com/articles/2014/12/desalination-dependence-highlighted-by-maldives-water-crisis.html>

original state and through some calculations it has become evident that a project like this will cost Malta more than €1 billion – and this assuming, that there will not be any further deterioration.

Another issue that the country is facing is the increasing difficulty to restore the aquifers due to heavy urbanisation. This is causing most of the limited rainfall to run-off and end up in the sea as water is unable to seep through concrete and tarmac and other impervious surfaces. Therefore, the recharge rate of the aquifers has dropped due to increased urbanisation of the last years or so<sup>4</sup>. This fact is compounded negatively as the rate of precipitation over the years has fallen from the 50-year old average of 550mm per year to less than 400mm<sup>3</sup> in the last 2 years.

Water is an extremely important natural resource. Yet we take it for granted and have been abusing it for years. Water crisis is a phenomenon of the last 50 years, yet we don't have another 50 years to solve it. The status quo is unacceptable and a drive is required to create a sustainable plan that is cost effective, resource efficient and that is fair and equitable. It is also important that the policy makers bring this issue to the national agenda and stop procrastinating on finding a long-lasting solution to this national issue. It is also important that the long-term plan will have support across the political divide as no administration will be able to adequately address the complex issue within a single term.

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<sup>4</sup> Today 35% of Malta's surface area is built up.

Malta needs a water plan and we need it fast. The principles for this long-term water plan are that of ensuring that the aquifer remains a major player in the provision of water in Malta. This would ensure that the quality of water is of satisfactory levels, that the cost of water is affordable over the long term and that the aquifer can be used as a reserve in case of emergency. To be able to do this it is of utmost importance that the extractions are reduced to sustainable levels and that the aquifer is replenished.

This is an issue that needs to be addressed before it is too late. It is essential for the country to draft a national water policy to ensure the sustainability of this resource. I urge the politicians to listen and act, before time runs out.

As one farmer, Mr. Charles Borg who owns a legal borehole remarked 'we are killing the goose that lays the golden egg! We are being very short sighted and if we do not act in a sustainable way farmers using both legal and illegal boreholes are digging their own grave! No crops watered with salinated water will survive for long!' Just think about the repercussions that will ensue.