



Recommendations - Grey-water treatment as a Green Economy Initiative

Submitted to the Chair of the Greening the Economy Core Group

By the Malta Business Bureau's EU LIFE+ Investing in Water Project

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1. Background

The hotel industry could reduce its water consumption by up to 20% if in-house grey-water treatment were widely adopted. This measure would contribute to the improvement of industry's competitiveness by reducing costs, and benefit Malta by reducing pressure on scarce natural water resources, saving energy required in the production of reverse-osmosis water, and generate a number of additional jobs in the private water treatment sector.

2. Description

The EU LIFE+ Investing in Water Project has audited 45% of the hotels in Malta and Gozo. The audits have highlighted key water saving measures which would yield significant savings, are widely available on the local market, and are financially feasible offering reasonable return on investment periods.

Key amongst the water saving measures is in-house treatment and use of grey-water. Grey-water is the waste water from showers and wash-hand basins, and not being as contaminated as black-water (sewage), requires less technically intensive treatment to bring up to a suitable 2nd class water quality. Widespread greywater adoption could result in an industry-wide reduction in water consumption of up to 20%.

Malta could move to a situation where water consumption in hotels is drastically reduced. To bring this about an increased emphasis on grey-water treatment needs to be made. This could be brought about through:

- 1) A grey-water treatment policy for new hotels/existing hotels undergoing infrastructural renovation¹, or expanding considerably;
- 2) Awareness raising for hotel operators about the benefits of grey-water treatment;
- 3) Financial grants supporting the necessary investments into grey-water treatment facilities in existing hotels.

¹ Hotels undergoing infrastructural renovation are defined as hotels for which the bathrooms are being re-furnished allowing for plumbing to be upgraded through the separate collection of grey-water (waste shower and wash-hand basin water) from black-water (waste toilet water), and the distribution of 2nd class water to toilets.

2.1 A grey-water treatment policy for new hotels/hotels undergoing infrastructural renovation

If the MTA were to adopt a policy incentivising the voluntary best-practice adoption and implementation in hotel investment plans of grey-water treatment, the adoption of this technology would automatically take off. Initially hotels with foresight and a view to environmental and operating cost sustainability would take advantage of the policy. With such industry leaders in the hospitality sector setting the pace, hesitant operators would soon catch up with these standard-setters

Both new hotels as well as those undergoing infrastructural renovation or significant extensions should be encouraged to introduce grey-water harvesting. An adequately-financed public policy supporting such measures in the shape of grants would be a key factor in bringing about the widespread adoption of grey-water treatment.

Such a policy should take into consideration hotels' economies of scale. Technology currently on offer in the local market should be evaluated to determine a minimum size of plant for which a financially attractive return on investment is offered. Hotels meeting, or exceeding, a 2nd class water demand which would be met by such a plant should be strongly incentivised to adopt grey-water treatment. Hotels which fall below this minimum could be provided with direct and commensurate financial assistance which will make good for the higher cost per unit of smaller plants.

This policy should ideally ensure that the technology available on the local market is regularly reviewed. The waste water treatment sector is experiencing rapid improvements in availability and affordability of technology, and the minimum-size of plant to offer an attractive return on investment is therefore expected to decrease over the short term.

This recommendation is based on experience of the EU LIFE+ Investing in Water Project with existing hotels running grey-water treatment plants. Based on this experience, the widespread promotion of grey-water treatment is considered a feasible commercial investment solution for hotel operators. Grey-water treatment is a waste water treatment type, which the EU LIFE+ Investing in Water Project has identified as being most transferable in the case of Malta's hotels. The reason for this is that:

- 1) Space can generally be found for a properly sized greywater treatment system;
- 2) Return on investment period is attractive;
- 3) The technology is easy to maintain by non-dedicated personnel;
- 4) Investment costs are not prohibitive for most enterprises;
- 5) It caters for a relatively low 2nd class water demand.

It should be noted that the other main waste-water treatment option that is applicable to Malta's hotels is in-house black-water treatment (sewage treatment). This option is not as widely applicable as grey-water treatment, mainly due to space requirements, the need for a much higher 2nd class water demand, larger initial investment costs, and maintenance being more demanding. However, it

is a very attractive water saving option for those hotels for which it is applicable. Any policy aimed at the widespread adoption of grey-water treatment should therefore not make this treatment compulsory in the case that a hotel has the circumstances and intent of investing in black-water treatment. In such a case, priority should be given to the black-water treatment.

2.2 Awareness raising for hotel operators about the benefits of grey-water treatment

Having carried out audits in nearly half of Malta and Gozo's hotels, the EU LIFE+ Investing in Water Project has identified the three operational grey-water treatment plants. The small number of plants currently operational is due to the relatively new status of this technology in Malta. Despite its relative novelty, the project notes that the hotels operating these plants are very satisfied with the performance and benefits reaped.

During the audits it became apparent that more awareness is needed amongst operators of the availability, requirements, and benefits of grey-water treatment. The partners feel that for a grey-water treatment policy to be successful levels of awareness will need to increase. To support this policy, the partners are willing to continue communications with hotel operators beyond March 2014, the end of the EU LIFE+ Investing in Water Project, regarding grey-water treatment.

The Malta Tourism Authority would be an asset in supporting a grey-water treatment policy through communications aimed at increasing levels of awareness amongst hotel operators. The MHRA and MBB are confident that with both the industry representative organisation (MHRA) as well as the industry national authority (MTA) communicating grey-water treatment, levels of awareness will continue to rise leading to a tangible take-up of the technology over the short-medium term.

2.3 Grants – funding grey-water treatment

To facilitate the take up of grey-water treatment, a grant scheme offering existing hotels attractive co-financing rates for grey-water treatment plants and related infrastructural costs should be made available.

Grey-water treatment technology currently has a minimum threshold for an attractive return on investment. Project experience suggests this is around 25 m³ per day. Since waste-water treatment technology is steadily and quickly advancing, leading to improved technology available at reduced cost on a regular basis, this figure should be confirmed prior to the formalisation of a policy encouraging the voluntary implementation of grey-water treatment.

Grants should be available which existing hotels intending to implement grey-water treatment could tap into. Such grants would ideally have higher co-financing rates for smaller projects. This would ensure that smaller hotels which would therefore find the higher relative cost of grey-water

treatment a burden, are given a commensurate level of support which would make good for the increased costs of installation that come with a smaller economy of scale.

Grants should also cover the plumbing works that go hand in hand with installing a greywater system. This consists of plumbing to drain grey-water to the treatment plant, and a 2nd class water distribution system to make use of the treated greywater.

It should be pointed out that it is unlikely that a high percentage of hotels will implement grey-water treatment on a short term basis, as greywater systems generally require some modification to the plumbing network. This upgrade would therefore best be implemented during major refurbishing works or when significant extensions are carried out to the properties. New hotels should all be robustly incentivised to install a grey-water treatment plant, or alternatively a black-water treatment plant if conditions are suitable.

Due to the need for infrastructural renovations in most hotels to accommodate greywater installations, it is likely that only a small numbers of hotels will implement grey-water treatment on an annual basis. The funding scheme should therefore take this into consideration, noting that it is highly probably that a small percentage of hotels will apply for funding on an annual basis, but that this demand would be constant over the medium term following the scheme's announcement. The funding scheme should therefore be made available over a medium term period, and re-evaluated at the end of that term.

It is also important to note that when hotels compare financial gains from energy or water saving projects, other initiatives might offer a higher return on investment. Examples of such projects in the current economic environment include energy saving lighting and heating projects. A grant scheme focused on the investment in grey-water treatment solutions by existing hotels, should ensure that operators are not forced into adopting grey-water treatment instead of other energy and/or water saving initiatives which would be more financially attractive. The ideal situation is to have operators financially assisted in investing across the whole range of energy-saving practices, rather than forced to opt for one solution instead of another(s) due to budgetary restraints.

In addition, the grant should be structured to counter the lack of liquidity which many of the smaller hotels experience. An instrument offering delayed payment, such as through a tax rebate or credit, would not counter the root difficulty of low liquidity. Conversely, a grant based on advance payment would help operators meet with the initial investment costs without any adverse impact on their cash flow.

During the previous programming period, existing hotels could apply for EU funding through the 'Grant Scheme for Sustainable Tourism Projects by Enterprises', funded through the ERDF structural funds. During the next programming period (2014-2020), a similar scheme could be considered, through which existing hotels would be able to finance grey-water treatment projects. It should be noted however, that through the previous call hotels could not fund measures which were made mandatory through an MTA related Legal Notice. Compliance-related costs were and remain ineligible for EU funding assistance. This is particularly important since proper consideration should therefore be given in identifying the right policy mechanism through which grey-water treatment solutions in existing hotels will be encouraged in the coming years. A non-mandatory, voluntary based but supply-side incentivised approach is consequently the most feasible measure that we

advocate to be adopted by the authorities in order to promote a faster and wider uptake of grey-water treatment practices by hotels irrespective of size and prospective investment plans.

2.4 Suggested timeline

2014 Q1	identification of minimum size for grey-water treatment plants in hotels
2014 Q2	stakeholder consultation and conclusion of grey-water treatment policy for hotels
	development of funding package
	MHRA and MBB communications with operators regarding grey-water treatment
2014 Q3	adoption of grey-water treatment policy for hotels
	commencement of funding package
	MHRA and MBB communications with operators regarding grey-water treatment

3. Desired outcome

This policy would yield benefits in the medium to long term. Within five years of adoption all new hotels and hotels which have undergone infrastructural renovations will have grey-water treatment systems. This will represent a minority percentage of hotels in Malta. However, within 15 years, as more new hotels are developed and many hotels undergo infrastructural renovations most of the hotels on the islands will have grey-water systems.

4. Benefits to increased grey-water adoption

Widespread adoption of grey-water treatment by the hotel industry would benefit Malta mainly through a reduced water and electricity consumption, and through the creation of a number of additional jobs.

4.1 Generation of Green Jobs

The EU LIFE+ Investing in Water Project estimates that if all hotels were to implement grey-water treatment systems this would result in the generation of between 13 and 20 full time equivalent positions in the private water treatment sector. The jobs would be generated as follows:

- Installation - 97,500 man hours in installation, which equate to slightly more than 10 full time jobs for 5 years (assuming all installations are carried out in 5 years), or 3 full time equivalent jobs if all installations are carried out over a 15 year period.
- Operation - 7 full time job equivalent (for as long as the plants remain operational)
- Maintenance - 3.5 full time job equivalent (for as long as the plants remain operational)

4.2 Water and energy savings

For an estimated cost of EUR 3,816,500 the hotel industry could adopt grey-water treatment, resulting in annual savings of EUR 979,000 on water bills, leading to a repayment on investment period of just under 4 years. This measure would also result in the industry saving 492,000 M³ of water per annum. National electricity savings in the production and distribution of water would reach 2,301,120 kWh/year.

While figures for savings are dependent on guest nights per annum, the guest night per annum figures used in the presented calculations were obtained directly from hotels audited by the EU LIFE+ Investing in Water Project, and cover 2011 and 2012 for individual hotels. The total savings will therefore fluctuate from year to year as guest nights per annum fluctuate, however since in Malta this fluctuation is not severe, the savings figures fluctuations will be relatively minor.

The benefits listed above are explored in more detail in the following paper: Cremona, M; Saliba, G; 2013, *Greening the Economy – grey-water treatment as a job generator, water, energy and CO2 saver*, MBB EU LIFE+ Investing in Water Project. This paper is attached as Annex 1 to this document, and available for download from www.investinginwater.org/downloadables/

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