STATE OF THE ENVIRONMENT REPORT 2018

Chapter 6: Resources and Waste

Reporting status from 2009 to 2015

KEY MESSAGES

- A new Waste Management Plan covering the period 2014-2020 was developed charting the course of waste management initiatives to reach Malta's 2020 targets.
- There has been some notable progress since the State of the Environment Report (SoER) 2008 notably the commissioning of a new Mechanical Biological Treatment MBT plant at Malta North, the removal of the eco-contribution tax and the development of Extended Producer Responsibility (EPR) schemes for packaging, Waste Electrical and Electronic Equipment (WEEE), and batteries and accumulators.
- Malta currently lags behind on a number of 2020 targets and unless determined action is taken, these targets will not be achieved.
- There is still no firm incentive to separate waste. There are no economic instruments or suitable collection schedules to discourage the generation of mixed residual waste and to encourage increased separation.
- Waste generation per capita remains high when compared to EU countries. Municipal Solid Waste (MSW) generated per capita in 2015 stood at 624kg, compared to 481kg per capita for the same year in the EU.
- Resource productivity has also dropped with respect to previous years indicating that we have become more 'wasteful' of resources. In fact at 2015 it stood at 1.44 EUR/kg as opposed to the EU's 2.00 EUR/kg.
- The evidence of decoupling between waste generated and Gross Domestic Product (GDP) growth that manifested itself some years back seems not to be present any longer in the most recent trends.
- Between 2013 and 2015, whilst GDP grew by 15 %, municipal waste generation grew by 9 %, whilst this may be indicative of improved waste intensity performance. Increased waste generation shows that we are still unable to decouple waste generation from economic development.
- Construction and Demolition (C&D) waste remains the main waste stream and in 2015 constituted 80 % of total waste arising.
- More efforts on waste management are required over the next few years. These include solutions for residual waste management over and above our targets as well as a supporting landfill to whatever infrastructure is decided upon.

6.1 POLICY CONTEXT

The policy context in which waste management policies, plans, programmes and projects are developed and implemented stems from EU and local policy instruments. Driven mainly by EU legislation, which is subsequently transposed into Maltese law, local policy is shaped accordingly and tailored to local realities.

6.1.1 The local dimension

Waste Management policy in Malta is governed by Malta's Waste Management Plan 2014-2020 which was published in January 2014 by the Ministry for Sustainable Development, the Environment and Climate Change. The Waste Management Plan was developed in response to the obligations emanating from the Waste Framework Directive and contains a Waste Prevention Plan covering the same timeline.

The Waste Management Plan was underpinned by a drive to recognize waste for the resource value embedded in it and to moving waste management in Malta up the waste hierarchy through increased prevention, re-use, recycling and recovery. Hence the focus on efforts to reduce Malta's waste arisings, which are amongst the highest in the European Union, as well as to recognise the resource value of the various fractions of waste and to manage such fractions such as to maximise such embedded value.

Waste prevention is the highest stage of the waste hierarchy and is therefore the most environmentally friendly option as the absence of waste implies that no resources have been spent and no material needs to be managed. Malta's Waste Prevention Plan, amongst others, focuses upon:

- the need to raise awareness on the importance of reducing waste arising through behavioural changes;
- reducing municipal solid waste generated;
- minimising food waste;
- limit construction and demolition (C&D) waste;
- other measures.[1]

Malta's Waste Management Plan, on its part, recognises a number of targets that Malta is expected to reach in the short-term, which include:

- recycling 50 % of paper, plastics, metal and glass waste from households by 2020;
- allowing only 35 % (based on 2002 levels) of biodegradable municipal waste to be landfilled by 2020;
- recovering 70 % of C&D waste by 2020;

[1] MSDEC 2014.

- collecting 65 % of the average weight of electrical and electronic equipment placed on the national markets by 2021;
- achieving 55 %, 70 %, 80 % and 85 % re-use and recycling 75 %, 80 % and 85 % recovery for electrical and electronic equipment placed on the national markets by 2018;
- collecting 45 % of waste portable batteries placed on the market 2016;
- re-using and recovering 95 % of the average weight per vehicle per year by 2014.[2]

In order to reach such targets Malta's Waste Management Plan proposes a number of initiatives, some of which have been achieved in full or in part and which may be summarised as follows:

- the Malta North MBT plant was finalised and is now in operation thus increasing the amount of mixed waste that can be processed and increasing the amount of waste diverted away from landfill;
- the introduction of a third collection of separated, clean organic waste to improve the performance of the MBT plants in Malta and in terms of Malta's obligation to reduce biodegradable municipal waste (BMW) going to landfill. A pilot project covering 9 localities in Malta and the Gozo region commence late in 2015;
- restructuring of the existing collection system so as to provide treatment facilities with source separated waste, minimising residual waste and promoting further the recycling of plastic, paper, metal and glass at a household level;
- developing solutions that will prevent the generation and/or disposal of C&D waste in favour of maximizing the limestone resource, which makes up approximately 70 % of the total C&D waste arising. To this effect a working group under the auspices of the Building Industry Consultative Council, with representation of key stakeholders, has been formed with a view to develop such solutions and produce a standard governing the reuse of such waste;
- revise the eco-contribution legislative framework in order to make it more conducive to business, reduce administrative burden and encourage the setting up of more schemes. Eco-contribution on packaging, electronic and electrical items and batteries has been removed and has led to the licensing of 2 schemes for packaging and packaging waste, 2 schemes for electronic and electrical waste and 2 schemes for batteries and accumulators;
- undertake a cost benefit analysis to establish the most economically and financially feasible option between local thermal treatment and the export of waste for energy recovery. These studies have been completed and the final proposal is, at the time of writing, at an advanced stage of being communicated and developed;
- Government has set up a Waste Management Stakeholders Group and a WEEE Stakeholders Group in order to engage with interested stakeholders on the achievements and proposals being contemplated such that constant feedback may be sought from those directly involved in the sector. To this effect, systems for the separate collection of WEEE have been substantially improved. These include systems set up by the Local Councils as well as by the two authorised WEEE compliance schemes to cater for the collection of WEEE directly from private households;

[2] Ibid.

- accompany plan implementation with an ongoing national information and awareness campaign. In April 2016, the Don't Waste Waste Campaign[3] was launched with a time window spanning over a period of three years. The campaign has developed information and awareness messages tailored at different audiences and disseminated various different media.[4]

The fire incident at Sant'Antnin Waste Treatment Plant in May 2017 was a blow to Malta's waste infrastructure as it completely destroyed the Material Recovery Facility. This is expected to have an effect on the processing of recyclable waste which will have to be exported at a considerable cost. This, to a certain extent, demonstrates the vulnerability of small island states such as Malta which do not generate sufficient waste to have more than one treatment facility for specific waste fractions, and hence do not have in-built redundancy in case of damages to one of the plants. Such exports come at a disproportionate cost to Malta. Notwithstanding, it is Malta's vision to reinstate such facility as well as to continue to strengthen the waste infrastructure with a view to putting in the best performance possible by 2020.

Malta's rate of landfilling municipal solid waste is still very high and this has placed considerable pressure on the existing void space. There are great concerns that the search for new landfill space is currently at a late stage. One needs to recognise that, whatever reduction and recycling rates Malta achieves, and whatever facilities are in place to manage and treat waste, there will always be the need for a supporting landfill. The challenge is to use new landfill void space judiciously and responsibly in line with our current and future targets.

6.1.2 The EU dimension

The two most recent and important developments that this State of the Environment Report will report upon are the adoption of the Circular Economy Action Plan in December 2015 and the proposed Waste Package with revised legislative proposals on waste contained in the same Action Plan.

The main thrust of the Action Plan was to maintain the value of products, materials and resources within the economy for as long as possible whilst minimising the generation of waste.[5] Thus the business model of take-make-dispose was reshaped to one which relies less on the utilisation of virgin resources and increasing the amount of waste that becomes a feedstock to the manufacturing process thereby valorisation the resource value of waste and reducing the amount of waste that has to be managed, treated or disposed.

The Action Plan identifies areas for action namely:

- Production including product design and production processes – the focus here revolves around promoting the reparability, upgradability, durability, and recyclability of products by

[3] Don't Waste Waste 2016.

[4] MSDEC 2014.

[5] EC 2015.

linking such aspects to the Ecodesign Directive. Best Available Techniques reference documents are to be developed containing guidance on best waste management and resource efficiency practices.

- Consumption – particularly encouraging reuse activities and ensuring that products placed on the market can be serviced with the necessary spare parts.
- Waste management – through revised legislation the Commission aims to achieve tougher recycling targets whilst also tackling requirements for extended producer responsibility (EPR) schemes to promote recycling and to limit further the waste allowed to landfill.
- Waste to resources – by developing quality standards for secondary raw materials as required and improving 'end-of-waste' concepts.
- Five priority areas are identified for targeted action namely:
  (i) plastics, where a strategy on plastics will guide action therein complemented by higher recycling targets;
  (ii) food waste, where existing legislative and methodological frameworks will be revised;
  (iii) critical raw materials, where guidance for their recovery will be developed;
  (iv) construction and demolition waste, to recover valuable resources generated during construction and/or demolition operations;
  (v) biomass and bio based products, where guidance and dissemination of best practices will be provided;
- Innovation, investment, and other horizontal measures – promoted through Horizon 2020 funding as well as through a pilot approach for 'innovation deals' to identify and address potential regulatory obstacles for innovators.[6]

The proposed legislative amendments, commonly known as the Waste Package, propose legal changes to the following directives:

- Directive 2008/98/EC on waste;
- Directive 94/62/EC on packaging and packaging waste;
- Directive 1999/31/EC on the landfill of waste;
- Directive 2000/53/EC on end-of-life vehicles;
- Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators; and
- Directive 2012/19/EU on waste electrical and electronic equipment.

[6] Ibid.

The Waste Package includes revised long-term targets for the reduction and management of waste as follows:

- A common EU target for recycling 65 % of municipal waste by 2030;
- A common EU target for recycling 75 % of packaging waste by 2030;
- A binding landfill target to reduce landfill to maximum of 10 % of all waste by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified and improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's by-product into another industry's raw material;
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles).

6.2 WASTE GENERATION

Data available today on the amount of waste generated can provide an accurate picture of waste arising in Malta and how this waste is ultimately managed. The total waste generated is the sum of the waste arising from three different waste streams namely:

- Municipal solid waste (MSW);
- Construction and demolition waste (C&D); and
- Commercial and industrial waste (C&I).

The following chapter refers to both ERA and EUROSTAT data. Whilst the report prioritised the use of single data sources for ease of comparison, the report had to revert to various sources in instances where data was not available. In this regard, the data presented is correct relevant to the methodology used by the data provider.

Table 6.1 summarises the amount of waste generated across each of these three categories for the period 2007-2015.

Table 6.1: Total waste generated by type 2007-2015 (tonnes)

Year	Municipal solid waste	Construction & demolition waste	Commercial & industrial waste	Yearly Total
	tonnes			
2007	265,948	2,500,664	96,072	2,862,684
2008	276,008	1,996,342	62,242	2,334,592
2009	267,774	600,417	61,864	930,055
2010	248,672	1,092,330	69,239	1,410,241
2011	247,385	716,057	81,900	1,045,342
2012	247,032	1,567,003	90,909	1,904,944
2013	246,390	1,825,242	84,096	2,155,728
2014	256,189	1,501,045	95,664	1,852,898
2015	269,436	1,477,909	101,049	1,848,394

Source: *ERA*

The period under review demonstrates an overall declining trend with a reduction of 40 % in total waste arising in 2015 when compared to 2007, mainly pertaining to C&D waste fluctuations. This is encouraging as in 2014, the total waste generated in the European Union by all economic activities and households, was the highest amount recorded during the period 2004-2014.[7] Nevertheless, the upward trend from 2012-2015 must not be overlooked.

The single most influencing stream characterizing this decline is the C&D waste stream which over the same period saw a decline of 46 % in waste arising with all-time lows for this stream resulting in 2009 and 2011, consonant with the economic uncertainty that prevailed during and preceding that period. C&D waste accounted for 80 % of total waste arising in 2015 and 81 % in 2014. These figures include a substantial amount of dredged and inert material as well as mineral waste from excavation. This compares to the 63 % that construction (35 %), mining and quarrying (28 %) activities in the EU had in 2014.[8]

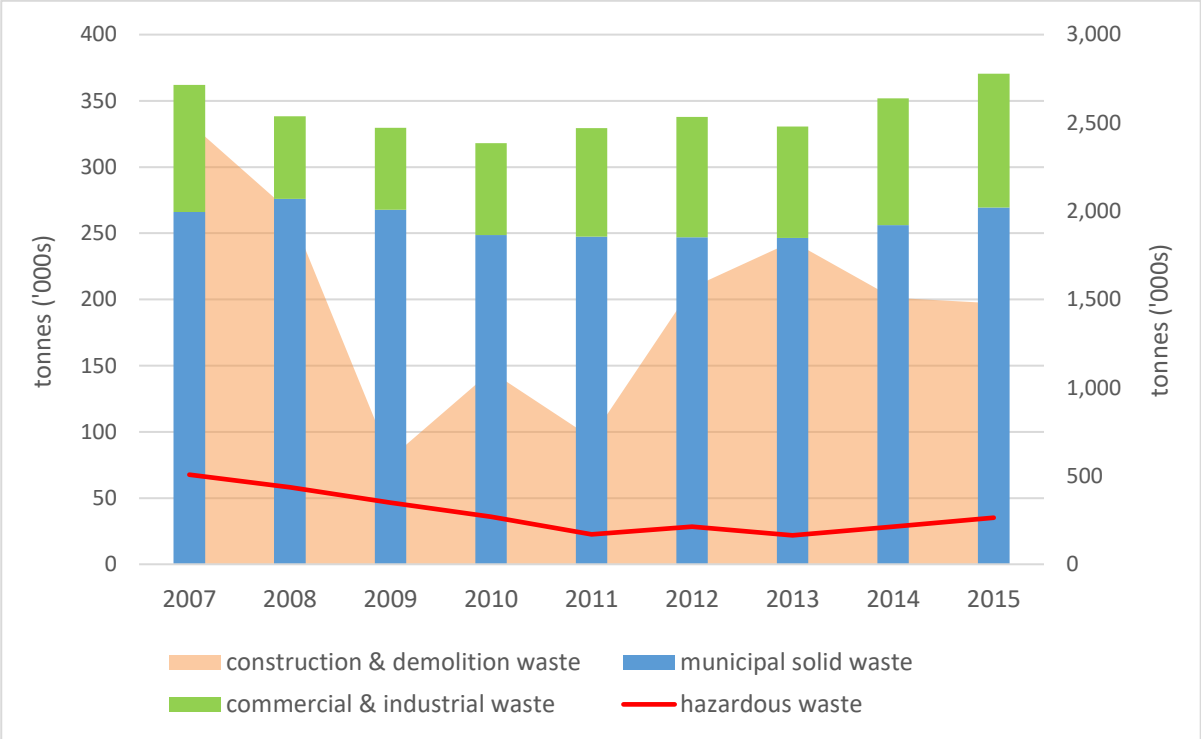
Hazardous waste generated also experienced a significant decline over the period under review, dropping 48 % from 2007 levels. This waste stream constituted 2 % and 2 % of total waste arising in 2015 and 2014 respectively. At an EU level, hazardous waste arising accounted for 4 % of total waste generated.[9]

[7] Eurostat 2017a.

[8] Ibid.

[9] Ibid.

Figure 6.1: Total tonnage of Waste Generated by Type 2007-2015 (construction and demolition waste on secondary axes, and hazardous waste is a proportion of municipal solid waste and commercial and industrial waste)



Source: *ERA*

On the other hand, municipal solid waste and commercial and industrial waste were relatively unchanged at the two ends of the period under review but experience intra-period fluctuations. The only year in which all four streams experienced a decline was 2009. Figure 6.1 shows the generation of waste according to the various streams during the period under review.

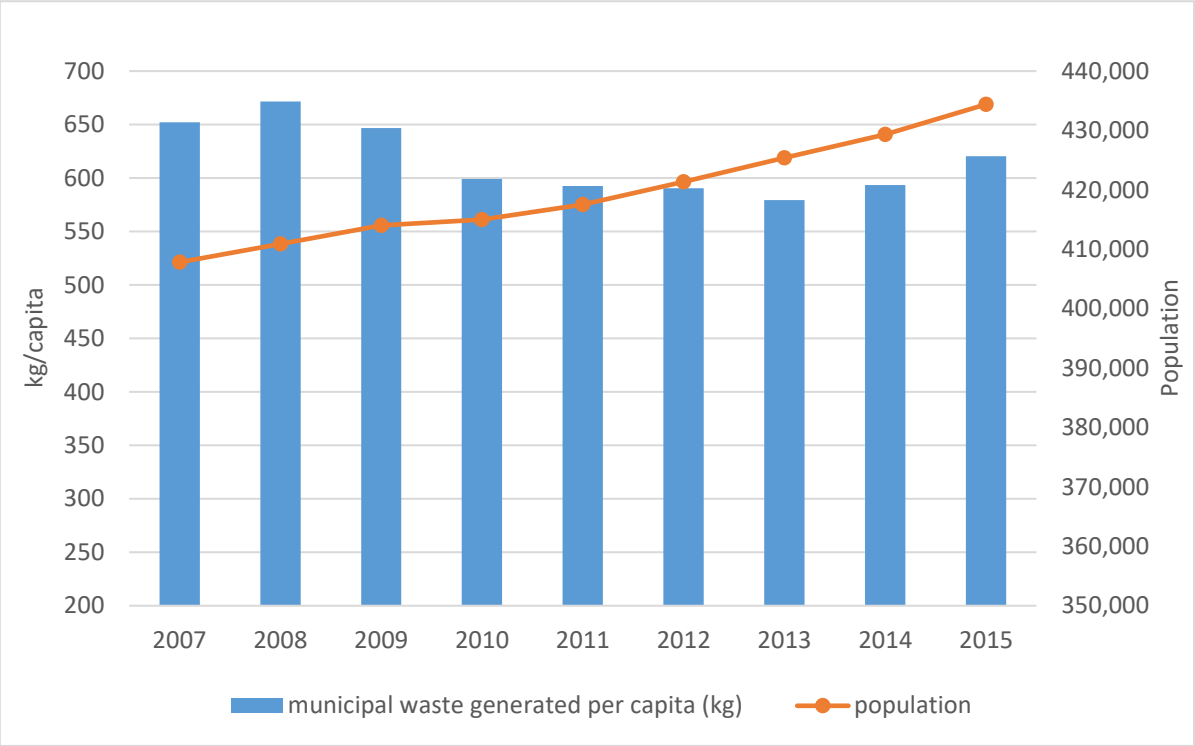
6.2.1 Municipal waste generation

Municipal waste is composed largely of waste generated by households, but may also include waste that is similar in nature and which is in turn generated by commercial enterprises, offices and public institutions, and collected by the local council as part of its waste collection rounds. Municipal solid waste generation in the EU-28 stood at 8 % of total waste arising in 2014 compared to Malta's 14 % for the same year.[10] Between 2014 and 2015, Malta saw an increase in MSW of 5 % when compared to an EU-28 level of 1 %.[11] Malta's MSW generation during the period in caption as compared to the population is shown in Figure 6.2.

[10] Eurostat 2017b.

[11] Eurostat 2017c.

Figure 6.2: Municipal Waste Generated Per Capita in Malta



Source: *ERA*

MSW generation in Malta amounted to 624kg per capita in 2015 compared to 481kg per capita for the same year in the EU.[12] In this respect, Malta ranks as the fifth highest generator of MSW per capita lower only than Luxembourg, Germany, Cyprus and Denmark, with all countries generating over 600kg per capita.[13] Between 2009 and 2015, MSW generation per capita dropped by 27kg per capita although statistics for 2014 and 2015 show increases of 14kg and 27kg from the previous year respectively.[14] Such an increase may be attributed to different causes be it an increase in household consumption, evolving consumption patterns as well as an increase in expatriates living in Malta with different consumption patterns.

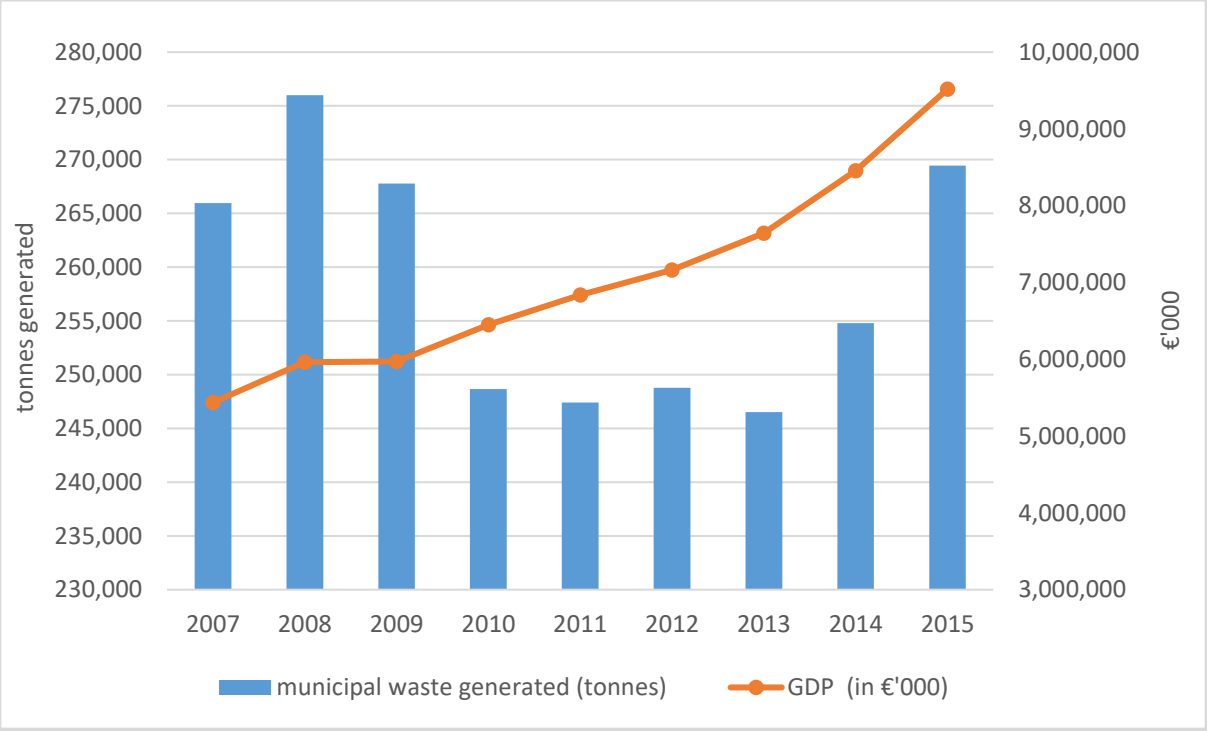
It is also interesting to observe how MSW generation varied with Malta's Gross Domestic Product (GDP). Figure 6.3 shows that whilst GDP has maintained a largely rising trend, MSW generated declined between 2008 and 2013 but rose during the period 2013-2015. Whilst this may be indicative of improved waste intensity performance over the years, Malta still generates significant volumes of waste and hence it is more a question of economic growth having outgrown MSW generation than the desired decoupling effect.

A Household Waste Composition Survey carried out by the National Statistics Office (NSO) between July 2011 and April 2012 showed that food waste constitutes 52 % of the total household waste. Paper and cardboard, plastic, glass and metal constituted 18 %, 12 %, 6 % and 4 % respectively.[15]

[12] Eurostat 2017c.
[13] Eurostat 2017d.
[14] ERA 2016.
[15] NSO 2012.

This demonstrates that despite the fact that Malta has relied for so long on landfilling, the current scenario augurs well for significant diversion away from landfill of organic material and packaging waste if not also for significant reduction through behavioural change in our consumption patterns.

Figure 6.3: Malta's Municipal Waste Generated against GDP



Source: *ERA/NSO*

The Waste Framework Directive,[16] the Landfill Directive[17] and the Packaging and Packaging Waste Directive[18] together place strong emphasis on the need to reduce waste arising as well as to recycle separated waste to divert such waste away from landfill and make better use of resources. Figure 6.4, which shows how MSW was managed over the period under review, clearly indicates an over-reliance on landfilling. Recycled MSW stood at just 6 % of total MSW, a figure which should increase in subsequent years but which will largely depend on the success Malta achieves in approaching its targets.

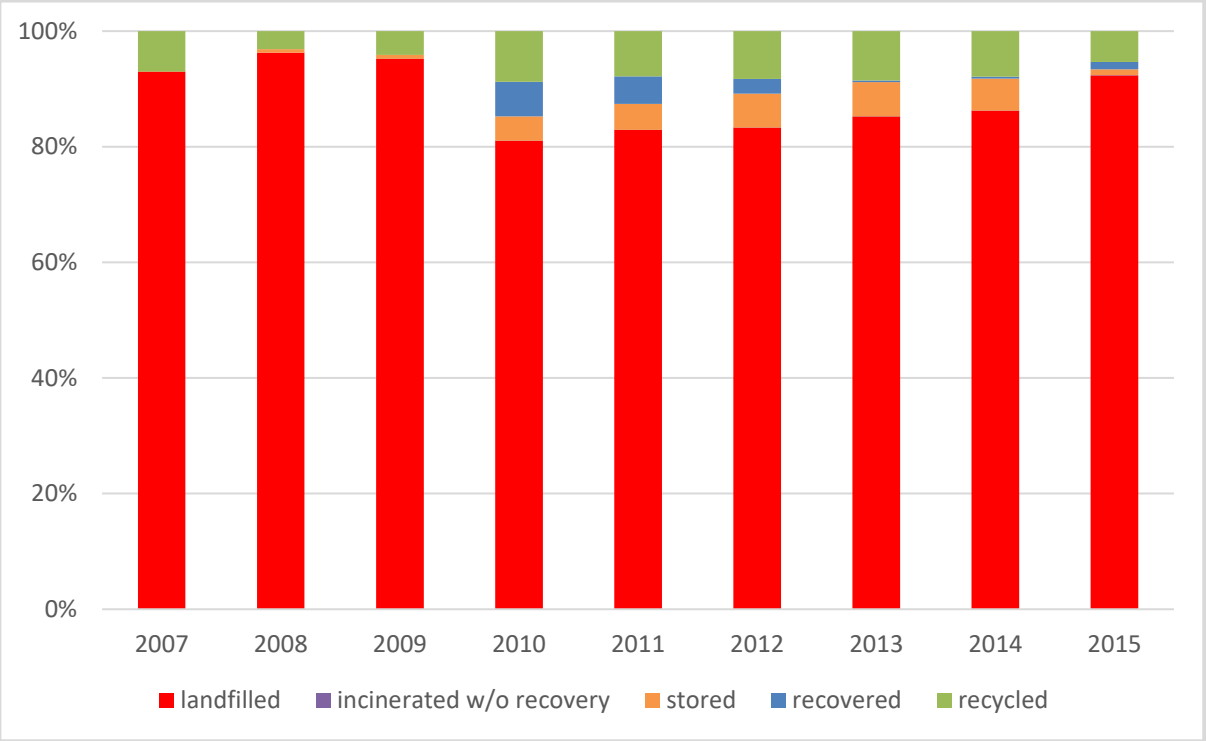
The Malta North plant was commissioned and is expected to contribute towards a greater diversion from landfill, but a greater drive towards separation of recyclables and organic fractions will be required with urgency if Malta's 2020 targets are to be met.

Malta's Waste Management Plan[19] projects MSW increasing to 310,356 tonnes by 2040, an increase of 15 % over 2015 levels, which makes the minimization, separation and recycling challenge even more pressing. In fact, one can observe that recycled MSW fell by 14 % between 2014 and 2015. On

[16] Council Directive 2008/98/EC.
[17] Council Directive 1999/31/EC.
[18] Council Directive 94/62/EC.
[19] MSDEC 2014.

the other hand, preliminary results from the organic waste pilot project demonstrate an encouraging rate of separation of organic waste, a practice which needs to be rolled out nationwide at the expense of mixed waste collection frequencies.

Figure 6.4: Treatment of municipal solid waste (%)[20]



Source: *ERA*

On the basis of NSO's 2012 characterisation survey,[21] 38 % of household waste is made up of plastic, paper/cardboard, metal and glass. Applying this to the 274,432 tonnes of MSW generated in 2015, the amount of dry recyclables in MSW should amount to around 105,382 tonnes. In 2015, based on statistics released by NSO in 2017, 2,652 tonnes of dry recyclables were collected through bring-in sites whilst a further 14,926 tonnes were collected through the kerbside collection system.[22] Taken together, this accounts for a separation rate of around 17 % which is low, compared to the Malta Waste Management Plan 2014-2020 recycling target of 50 % of paper, plastics, metal, and glass waste from households that Malta needs to achieve by 2020 (Figure 6.5 refers). Circa 190,000 tonnes of biodegradable municipal waste generated were landfilled in 2015 (Figure 6.6 refers). The latter exceeds the amount of biodegradable municipal waste generated that is allowed to landfill, which currently stands at circa 50,000 tonnes.

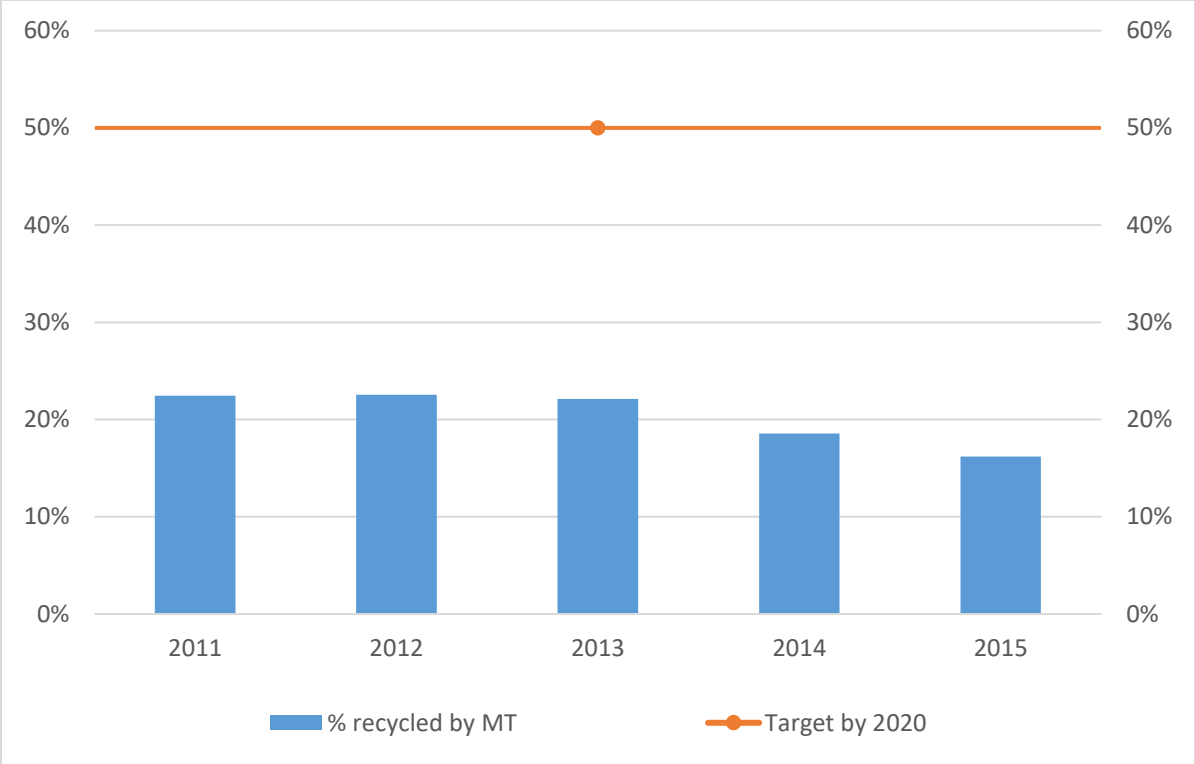
It is encouraged that the various measures identified in Malta's Waste Management Plan are further pursued and enhanced to move waste up the hierarchy, reducing waste generation and increasing source separation and recycling efforts at household level, thus diverting waste from landfilling.

[20] Waste stream also includes amounts of hazardous waste.

[21] NSO 2012.

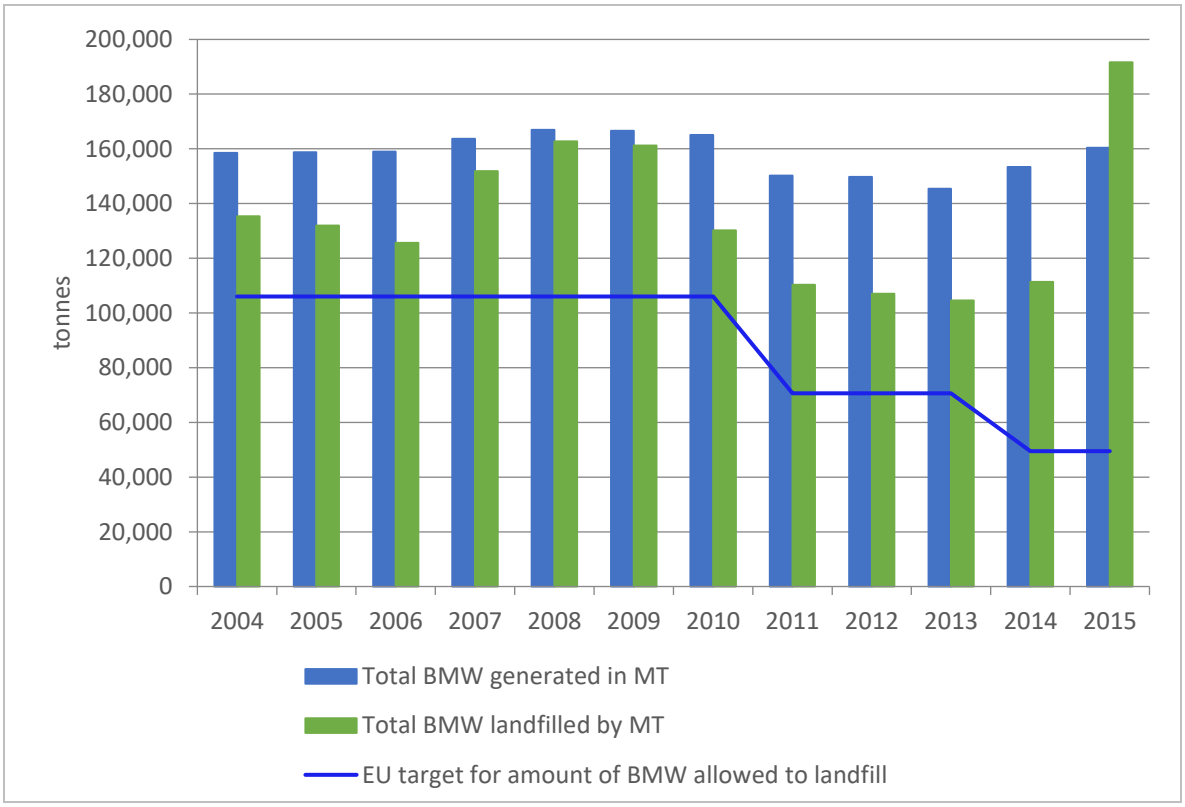
[22] NSO 2017.

Figure 6.5: Household waste recycling rate by Malta



Source: *ERA*

Figure 6.6: Biodegradable municipal waste (BMW) landfilled by Malta

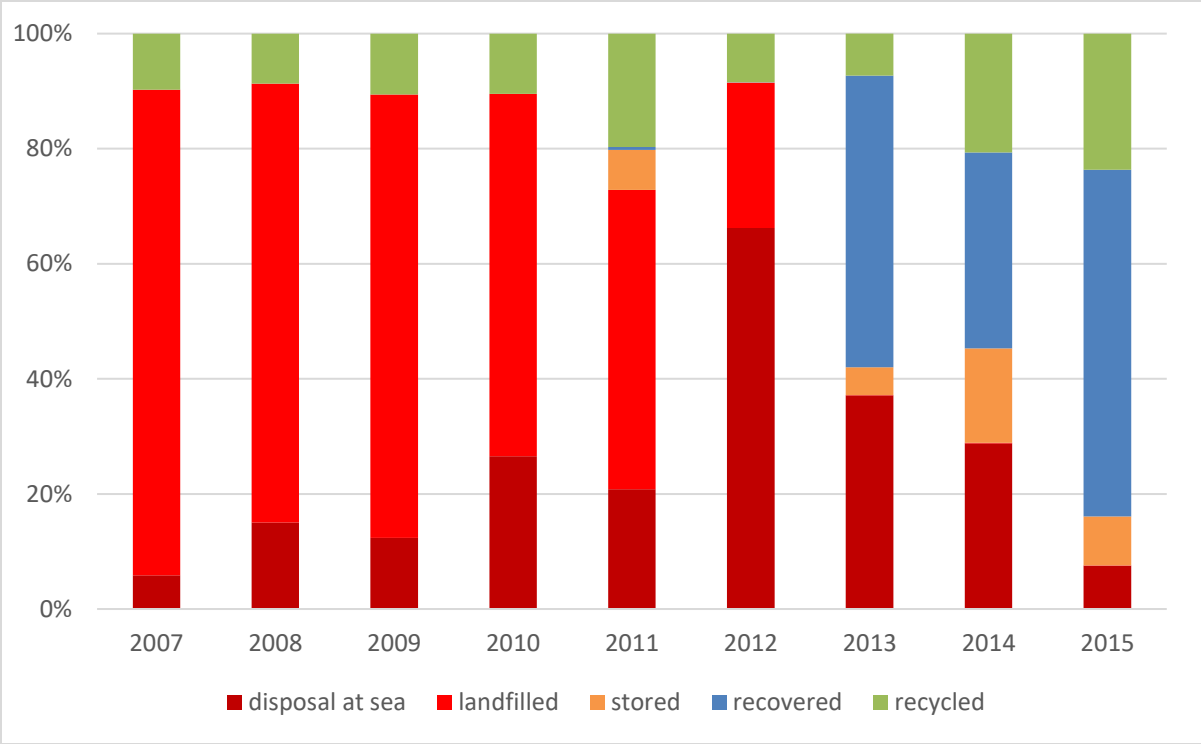


Source: *ERA*

6.2.2 Construction and demolition waste

As outlined earlier, although C&D waste generation declined by 46 % during the period under review it still accounted for 80 % of total waste arising in 2015.[23] Figure 6.7 shows how this waste stream was managed, and Figure 6.8 shows the 2012-2015 average composition of this waste stream.

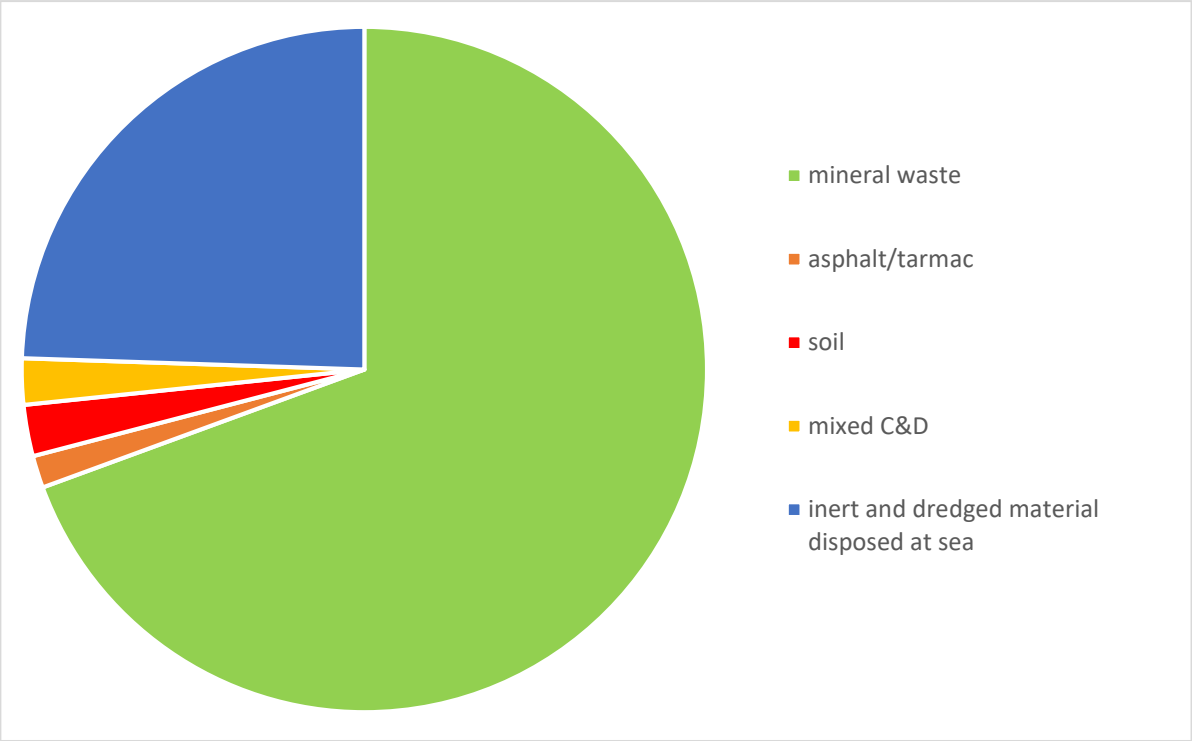
Figure 6.7: Treatment of construction and demolition waste (%)



Source: *ERA*

[23] These figures, and those referring to 2014, include a substantial amount of dredged and inert material as well as mineral waste from excavation.

Figure 6.8: 2012-2015 average composition of C&D waste (%)



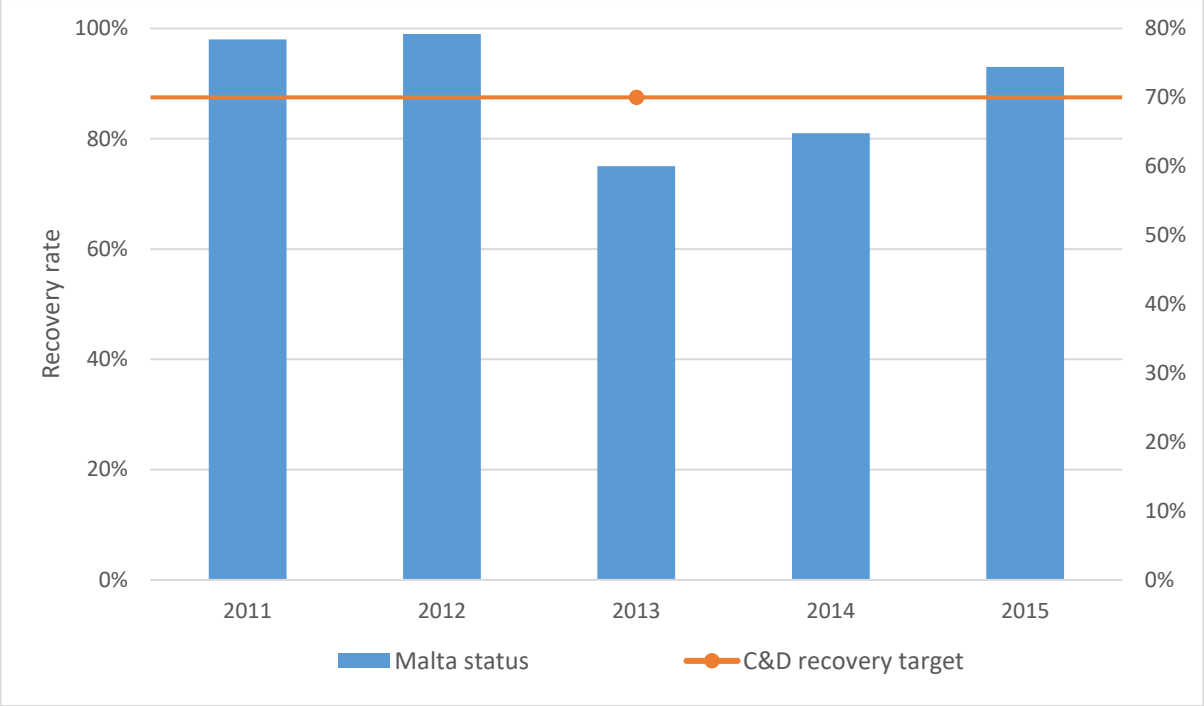
Source: *ERA*

So far the majority of C&D waste is being recovered through the backfilling of spent quarries (Figure 6.9 refers). Whilst this is positive as it restores quarries to open spaces, it is important for the amount of void space actually available to be assessed in order to have a long-term plan for the recovery of such waste. The construction lobby has already voiced its concern at the lack of void space, an issue which was tackled; however, a long-term plan is required for such purpose.

More importantly, the reduction and recycling aspects of C&D waste need to be addressed. The Waste Management Plan puts forward recommendations for engaging stakeholders to find solutions thereto which, amongst others include innovative excavating processes for large sites as well as encouraging material reuse. It is positive to note that the Building Industry Consultative Council (BICC) is leading an initiative to promote this aspect as well as to develop a standard for the reuse of C&D waste. The Commission's Circular Economy Action Plan also makes reference to the need to address this waste stream. It is important to try and find technological solutions for the use of C&D which, if need be, could be supported by economic instruments to make them competitive within an already established market.

The rate of C&D waste generated also reflects, to a certain extent, the rate of consumption of the limestone resource, amounting to approximately 70 % of C&D waste arising. Over the period under review 13 million tonnes of C&D waste have been generated amounting to an average of 1.46 million tonnes of C&D waste per annum. This figure includes a substantial amount of dredged and inert material disposed at sea and mineral waste from excavation. This also needs to be taken into account from a sustainable development perspective. Hence, market substitutes should be encouraged and promoted not only to encourage recycling but also to reduce the level of extraction to sustainable levels

Figure 6.9: Construction and demolition waste recovery rate



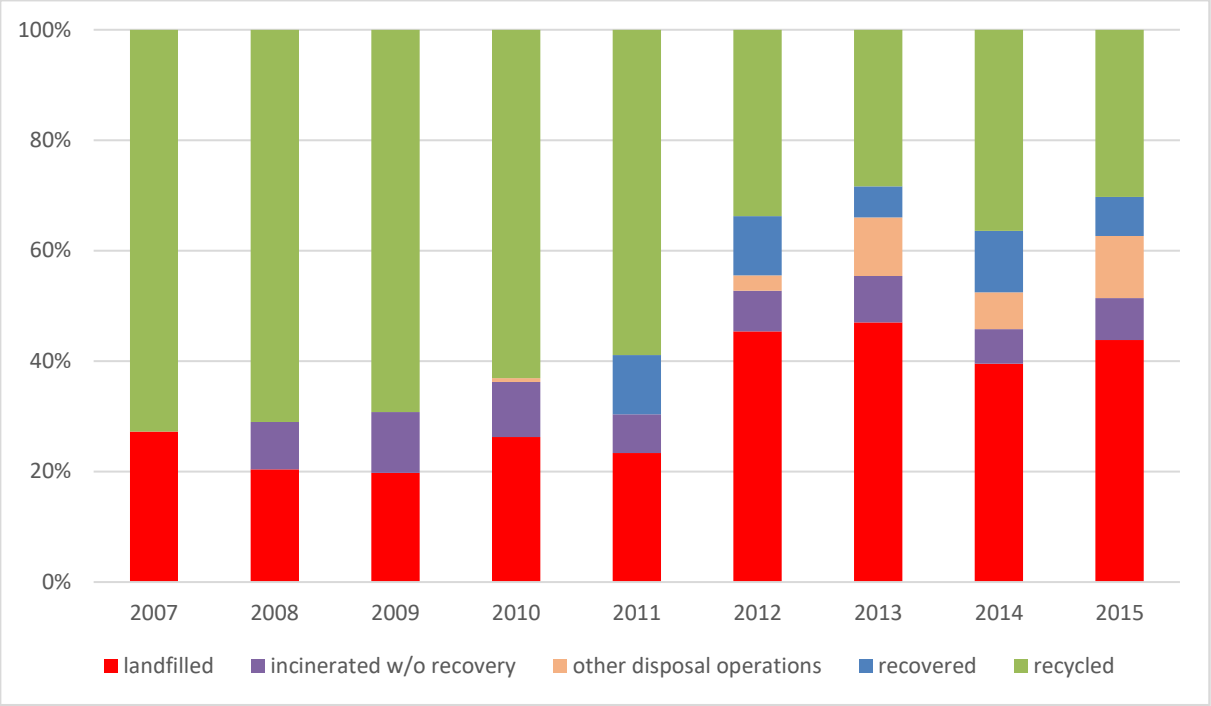
Source: *ERA*

6.2.3 Commercial and industrial waste

Commercial and industrial and hazardous waste include waste from industries such as factories and industrial plants, and commercial waste arising from activities of wholesalers, hotels and catering establishments and the service sector, of which these can be hazardous.[24]

[24] MSDEC 2014.

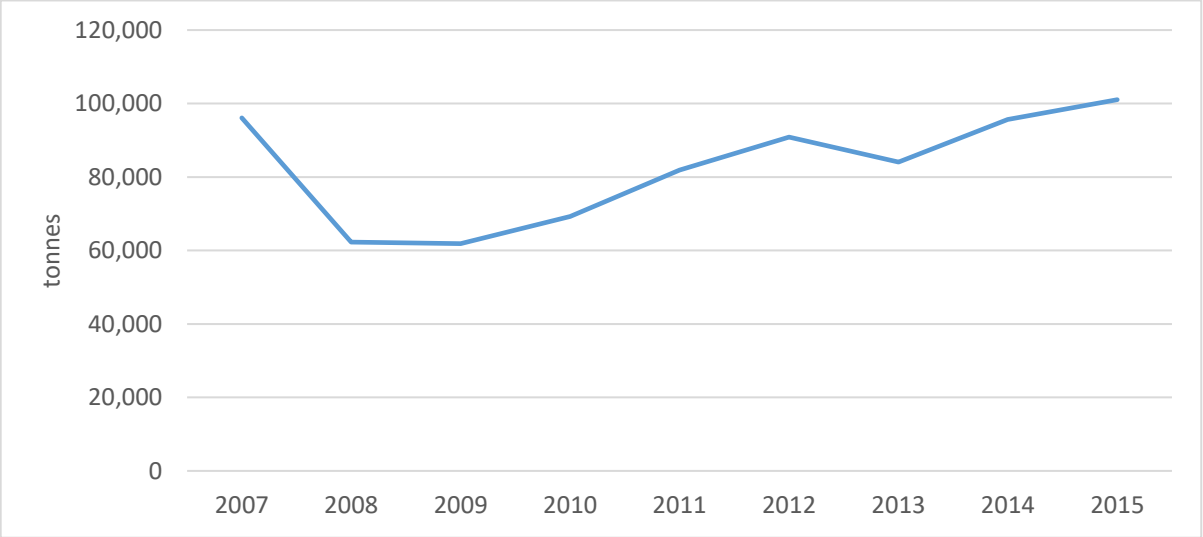
Figure 6.10: Treatment of commercial and industrial waste (%)[25]



Source: *ERA*

During the period under review the lowest Commercial and Industrial (C&I) waste volumes were generated between 2008 and 2010 and which may be consonant with the economic climate that prevailed at the time. On the other hand, the year 2015 represents the year in which the highest amount of such waste was generated at 101,049 tonnes. From a generation perspective, one can notice a rising trend as shown in Figure 6.11.

Figure 6.11: Commercial and industrial waste generated



Source: *ERA*

[25] Waste stream also includes amounts of hazardous waste.

A look at the way this waste stream is managed, also graphically represented by Figure 6.10, shows that the recycling component has decreased significantly mainly at the expense of landfilling. The years 2013 and 2015 represent the years where the lowest recycling was achieved at 28 % of total waste arising down from a high of 76 % in 2011. On its part, landfilling of such waste rose from a low of 20 % in 2008 and 2009, to 47 % in 2013 from which levels it has dropped in 2015 to 35 %.

The Circular Economy Action Plan emphasizes the importance of industrial symbiosis where the 'waste' from one industry becomes the 'feedstock' of another in order to promote resource efficiency and reduce waste. Local commercial and industrial enterprises will need to be assisted in order to find ways and means not only to reduce their waste but to maximize the resource efficiency of the material they use. These may include, amongst others, the simplification of authorization procedures for end of waste status as well as economic instruments that further promote R&I as well as similar instruments that enable resultant products to be distinguishable as well as competitive within the market.

6.2.4 Hazardous waste

The chemical composition of hazardous waste will many a times determine the treatment option. The main hazardous wastes exported from Malta are:

- industrial sludges;
- aqueous washing liquids and mother liquors;
- waste solvents;
- paint sludges;
- waste from gas cleaning and fly ash;
- waste oils;
- waste electrical and electronic equipment;
- lead acid batteries;
- asbestos;
- boiler dust;
- liquid combustible wastes;
- solid combustible wastes.

The majority of the waste streams identified above, are potentially recyclable or recoverable, such as the regeneration of waste oils, the regeneration of waste solvents and the recovery of precious metals and other metallic components from waste electrical and electronic equipment. Furthermore, a number of hazardous wastes are exported for energy recovery.[26]

[26] MSDEC 2014.

On a national level, the share of hazardous waste in the MSW, C&I and C&D waste streams is relatively small. In 2014 stood at 28,280 tonnes.[27] This represents 2 % of total waste arising which is lower than that of the EU-28 which, for the latest year available, 2014, stood at 4 %.[28] Notwithstanding, it has to be managed properly. One recognises that difficulties related to economies of scale prevail even more so in the management of such waste.

Figure 6.12 shows how hazardous waste was managed during the period under review. One can notice a decline in the amount of hazardous waste recovered which has dropped from levels of 70 % in 2011 to 25 % in 2015. Of some concern is the amount of hazardous waste which was stored in 2015 amounting to 16,569 tonnes, that is a share of 47 %. The characterisation of such waste is important as it will give a better idea of the nature of waste that is being stored and the associated risk it presents. It could be the case that such storage reflects the previously referred to lack of economies of scale and that such storage is being undertaken until there is an economically feasible mass of such waste to be exported.

Figure 6.12: Treatment of hazardous waste (%)

Source: *ERA*

6.3 WASTE RECYCLING AND RECOVERY

6.3.1 Civic Amenity Sites

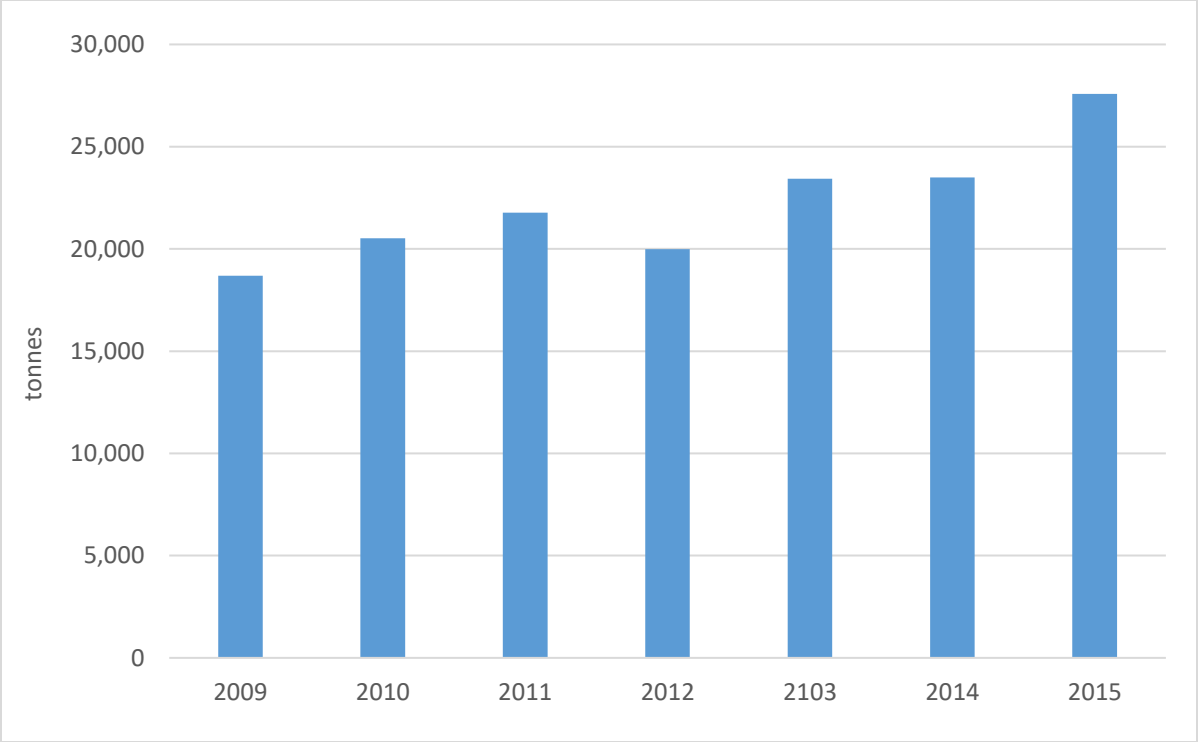
During 2015 a new Civic Amenity (CA) site became operational at Ta' Qali. This site also catered for green waste generated at the Pitkali by providing for an in-vessel composter for green waste. Other

[27] ERA 2016.

[28] Eurostat 2017a.

Civic Amenity sites exist at Ħal-Far, Luqa, Mrieħel, Magħtab and Gozo. The total amount of waste handled at these sites is shown in Figure 6.13.

Figure 6.13: Yearly transfer of waste to civic amenity sites



Source: *ERA*

The amount of waste handled at these sites shows a moderately rising trend with a total of 27,589 tonnes handled during 2015[29] and a total of 155,481 tonnes handled between 2009 and 2015.[30] The Mrieħel site has, by far, been the busiest of all sites handling 62,430 tonnes over the said period followed by Luqa (37,566 tonnes), Magħtab (24,036 tonnes), Ħal Far (16,373 tonnes), Gozo (12,964 tonnes) and Ta' Qali which during its period of operations in 2015 handled 2,046 tonnes of waste. Statistics from NSO[31] show that out of all waste handled by Civic Amenity sites in 2015, 37 % of such waste was mixed construction and demolition waste, 24 % was bulky waste and 20 % was wood.

6.3.2 Bring-in sites and kerbside collection of dry recyclables

There are a number of bring-in sites in every locality to encourage source separated paper, plastic, metal and glass collection. Today these bring-in-sites are operated and maintained by producer responsibility schemes for packaging and packaging waste. Between 2007 and 2015 a total amount of 33,936 tonnes of dry recyclables were collected from bring-in sites, an average of 3,771 tonnes per annum as shown in Figure 6.14. In 2015, glass was the main fraction collected at bring-in sites

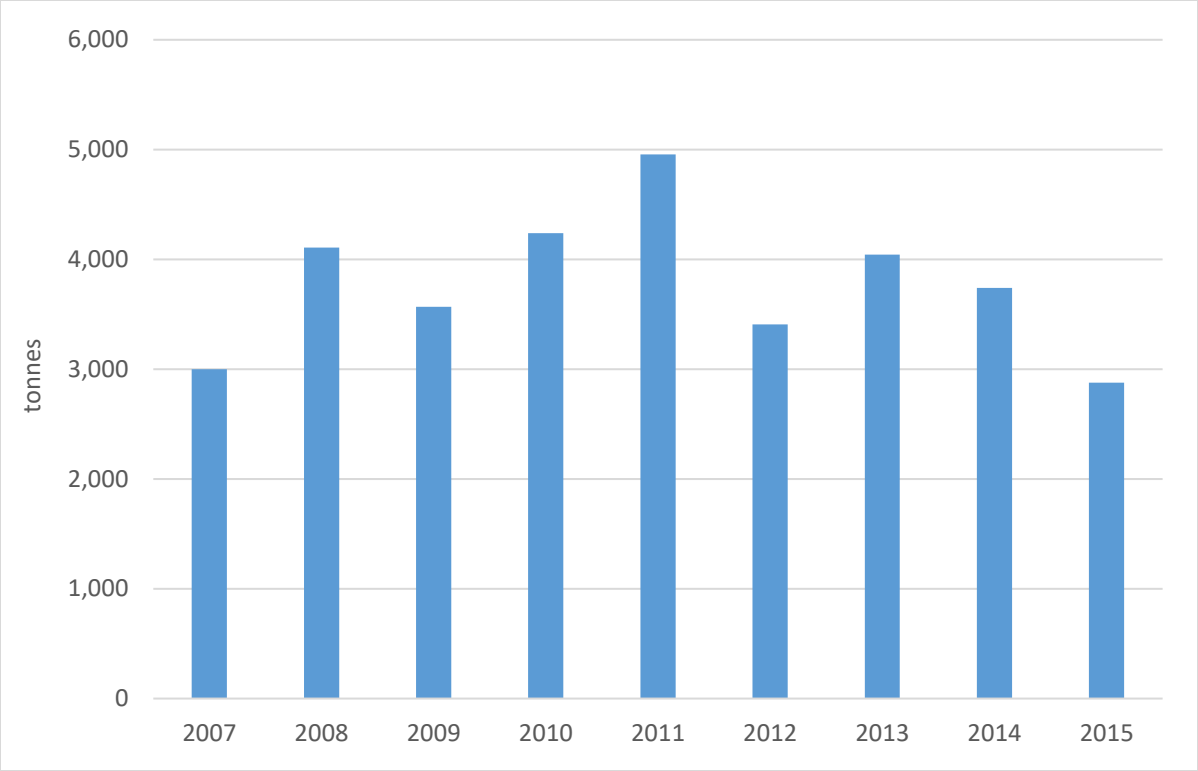
[29] ERA 2016.

[30] Ibid.

[31] NSO 2017.

(1,211 tonnes)[32] mainly because of its weight and because kerbside collection of glass is only available on a monthly basis. This was followed by paper and cardboard (781 tonnes), plastic (507 tonnes) and cans (153 tonnes).[33]

Figure 6.14: Yearly total waste collected through bring-in sites



Source: *ERA*

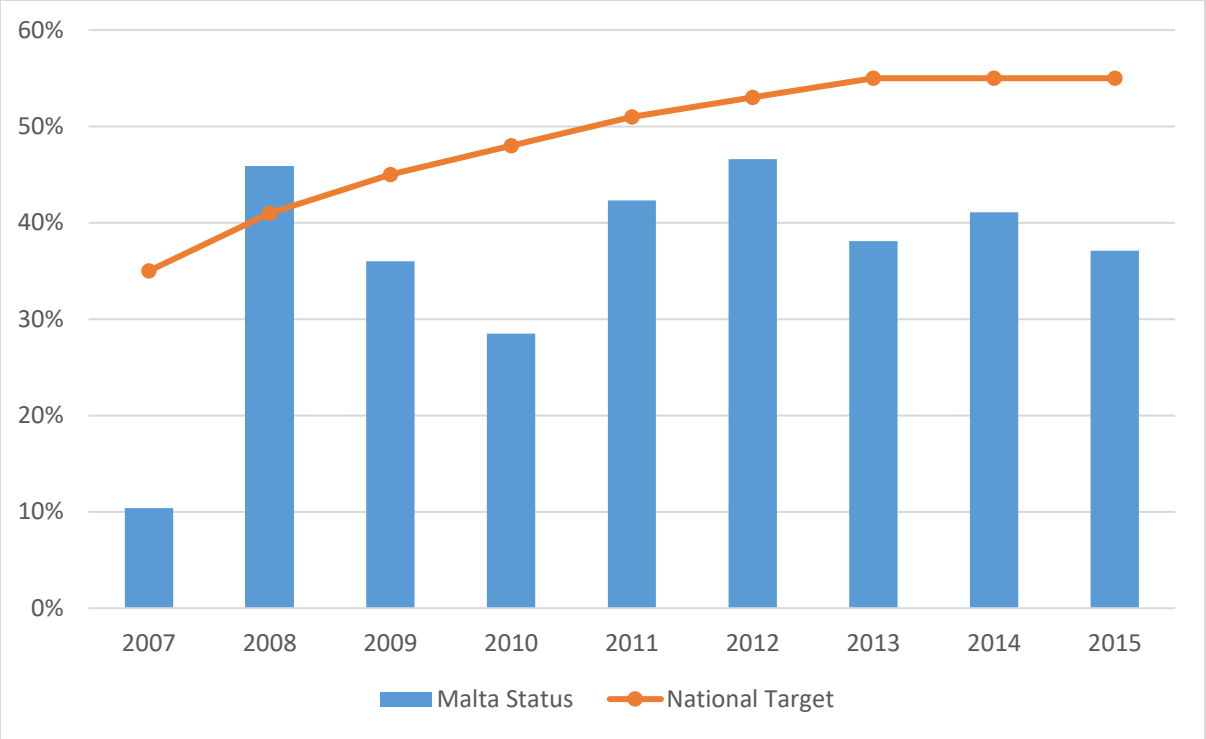
This amount is small when compared to the kerbside collection of paper, metal and plastic, and the door-to-door glass collection initiative, which, in 2015, yielded 14,926 tonnes and, over the period 2011-2015 showed year-on-year increases and averaged 12,075 tonnes per annum.[34] This is also a reflection of user friendliness and responsiveness with people more likely to collaborate if the waste is collected from outside their doors rather than having to take such waste to a bring-in site. Such kerbside collection is managed and financed by authorised packaging waste recovery schemes. As indicated in Figure 6.15, Malta achieved a packaging recycling rate of circa 38 % in 2015. The recyclables collected at the bring-in sites and through kerbside initiative are subsequently transferred to the Material Recovery Facility (MRF) at Sant'Antnin Waste Treatment Plant or to other MRFs managed by the private sector for manual and mechanical sorting. The sorted material is then baled and eventually exported for further treatment.

[32] NSO 2017.

[33] Ibid.

[34] Ibid.

Figure 6.15: Malta's packaging recycling rates



Source: *ERA*

6.3.3 Material Recovery Facility at Sant'Antnin Waste Treatment Plant

During May of 2017, the Sant'Antnin Material Recovery Facility (MRF) [35] was completely destroyed by a fire incident. Although there are other plants managed by the private sector, this incident placed added challenges for recycling in Malta as this was the only plant which could sort dry recyclables, which were subsequently exported. The only interim solution available will be to export such waste. As expected, the cost of such a remedial operation will be disproportionately expensive for Malta as well as for producer responsibility organisations. A new facility will need to be constructed but during that interim period a level of uncertainty prevails on our recycling abilities.

6.3.4 Treatment of organic waste

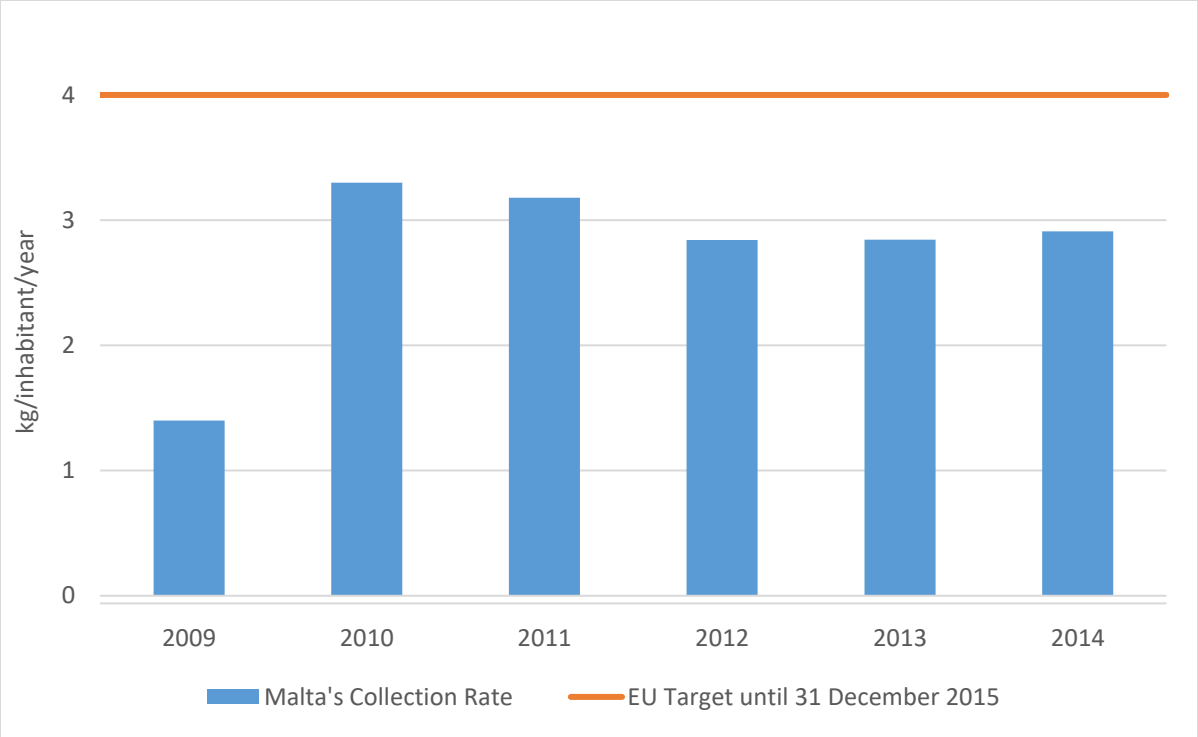
As of 2015, the Malta North MBT facility came into operation increasing Malta's capacity for the treatment of organic waste. However, in the absence of source segregated organic waste collection and a heightened increase in recycling of plastic, metal, paper and glass, this facility together with its sister plant at Sant'Antnin will still produce a high amount of rejects which will need to be landfilled or exported as poor quality Refuse-Derived Fuel (RDF). Section 6.2.1 above also refers.

[35] WasteServ Malta Limited 2018.

6.3.5 Private sector initiatives

During the period under review two new EPR schemes started to operate within the WEEE sector. A consignment note has been introduced for all WEEE so as to improve traceability. One of the schemes has also introduced to concept of WEEE trolleys in local councils with a view to encouraging the correct disposal of small items of WEEE. Systems for the separate collection of WEEE have substantially improved; nevertheless this is still hindered by national difficulties in achieving economies of scale in the recovery and recycling of such waste. As indicated in Figure 6.16, in 2014, the rate of separate collection of WEEE from private households stood at 2.91 kg/inhabitant/year.

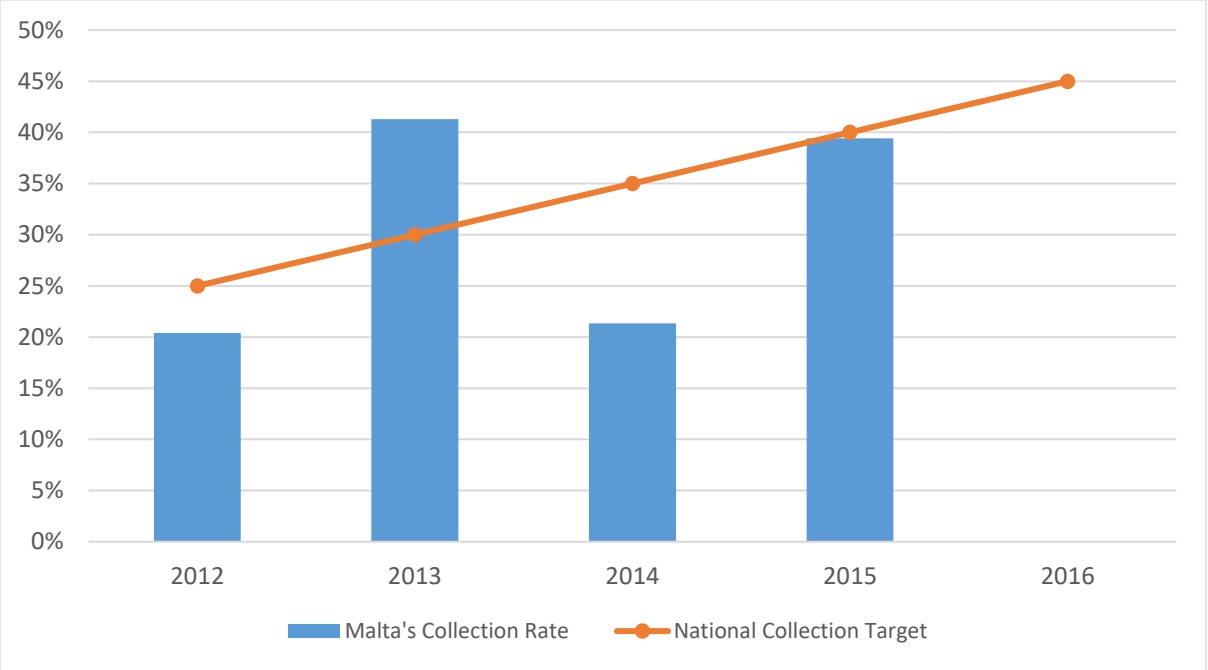
Figure 6.16: Rate of separate collection of WEEE from private households in Malta



Source: *ERA*

Two EPR schemes also operate in the waste batteries and accumulators sector with one scheme focusing mainly on waste portable batteries and accumulators and another focusing on waste automotive batteries and accumulators as well as waste industrial batteries and accumulators. As indicated in Figure 6.17 below, whilst the 2015 figures indicate a collection rate of approximately 39 %, further efforts are required to reach the national and EU collection target of 45 % for 2016 and beyond.

Figure 6.17: Malta's Collection rate for portable waste batteries and accumulators

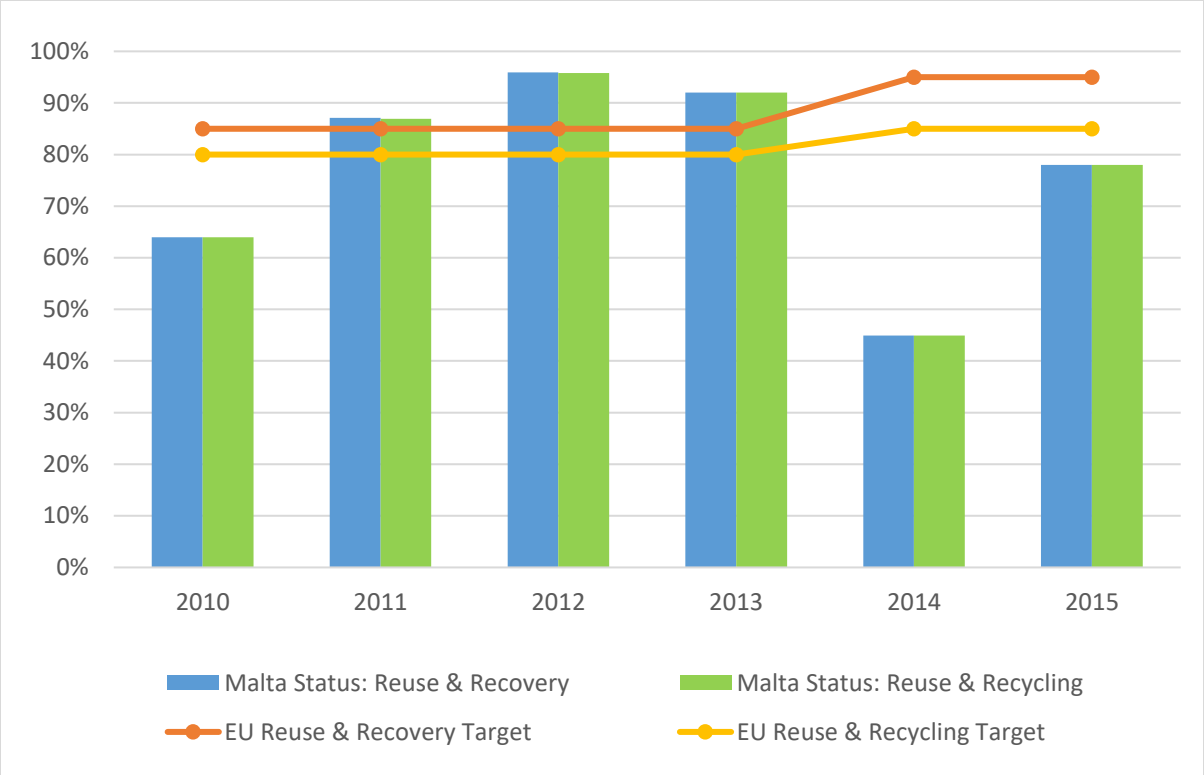


Source: *ERA*

To date a number of other facilities have applied for, or have been issued a permit to ensure environmental standards are maintained during their operations. A private operator has also started an initiative for the collection of textiles and clothes by installing bins for the collection of such material. The facilities operate in various sectors such as Waste Electrical and Electronic Equipment (WEEE), End of Life Vehicles (ELVs), Metals, Recyclables, Waste Lead Acid Batteries, Other Hazardous Waste, Tyres, Other Non-Hazardous Waste, and Container Storage Yards. The facilities contribute to the reduction of waste volumes, while recycling or reusing different materials. The increased regularisation, upgrading, and continued development of ELV authorised treatment facilities in Malta for example, enhances performance vis-à-vis targets in Figure 6.18. Most of these materials are exported so that they are recycled. Waste that is treated at authorised facilities may be deemed to comply with the environmental laws.[36]

[36] For further information refer to ERA 2016.

Figure 6.18: Rate of reuse, recovery and recycling of end-of-life vehicles arising in Malta



Source: *ERA*

6.4 USE OF MATERIAL RESOURCES

6.4.1 Domestic Material Consumption

Domestic Material Consumption (DMC) is defined as the total amount of material directly used in an economy. DMC equals Direct Material Input (DMI) minus exports. DMI measures the direct input of materials for the use in the economy. DMI equals Domestic Extraction (DE) plus imports.[37] In simple terms, DMC constitutes the annual quantity of raw materials extracted domestically to which are added all physical imports and from which all physical exports are deducted. DMC is a measure of the absolute level of the use of resources, distinguishing consumption that is driven by domestic demand from consumption that is driven by the export market. The term 'consumption' as used in DMC denotes apparent consumption and not final consumption. DMC does not include upstream 'hidden' flows related to imports and exports of raw materials and products.[38]

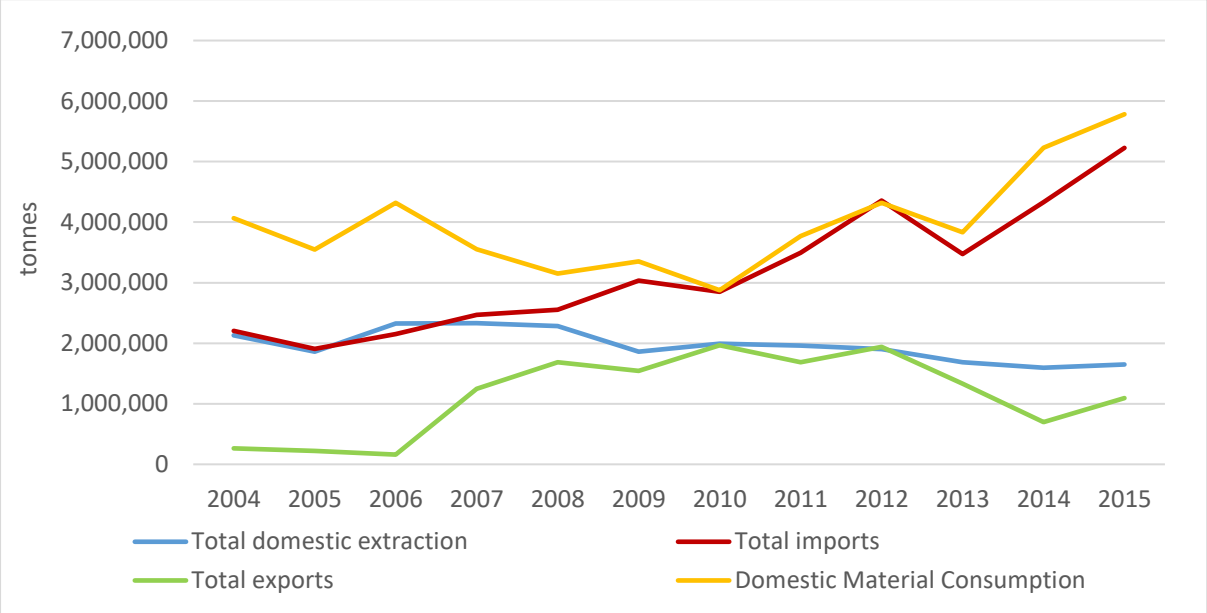
Figure 6.19 shows Domestic Material Consumption for the period 2004-2015. In this case a longer timeline has been used, as data is now being reported as Domestic Material Consumption and Resource Productivity in line with sustainable development indicators.

[37] Eurostat 2017b.

[38] Eurostat 2017e.

Domestic Material Consumption shows a rising trend which is particularly enhanced between the period 2013 and 2015. This is consonant with similar growth in population, GDP and MSW indicating that positive economic growth during this period resulted in a corresponding increase in local consumption. This is not always the case as can be seen during the period between 2010 and 2013 wherein, despite a decrease in MSW, and a rise in GDP, DMC levels still maintained an upward trend. Between 2007 and 2010, although there was an upward trend in GDP, DMC manifested a downward trend.

Figure 6.19: Domestic Material Consumption 2004-2015



Source: *NSO*

Imports consist of biomass and biomass products, metal ores and concentrates, raw and processed, non-metallic minerals, raw and processed, fossil energy materials/carriers, raw and processed and other products. Imports maintained a rising trend, with the exception for a drop between 2012 and 2013. In fact, imports are the major contributor to DMC with, at 2015 levels, an order of magnitude of 3.16 times that of domestic extraction. In fact total domestic extraction declined by 23 % and 29 % 2004 and 2007 levels respectively. Between 2007 and 2015 imports increased by 112 % with component increases of 202 % in fossil energy materials/carriers, raw and processed, by 168 % for metal ores and concentrates, raw and processed, by 32 % for non-metallic minerals, raw and processed and 7 % for biomass and biomass products.

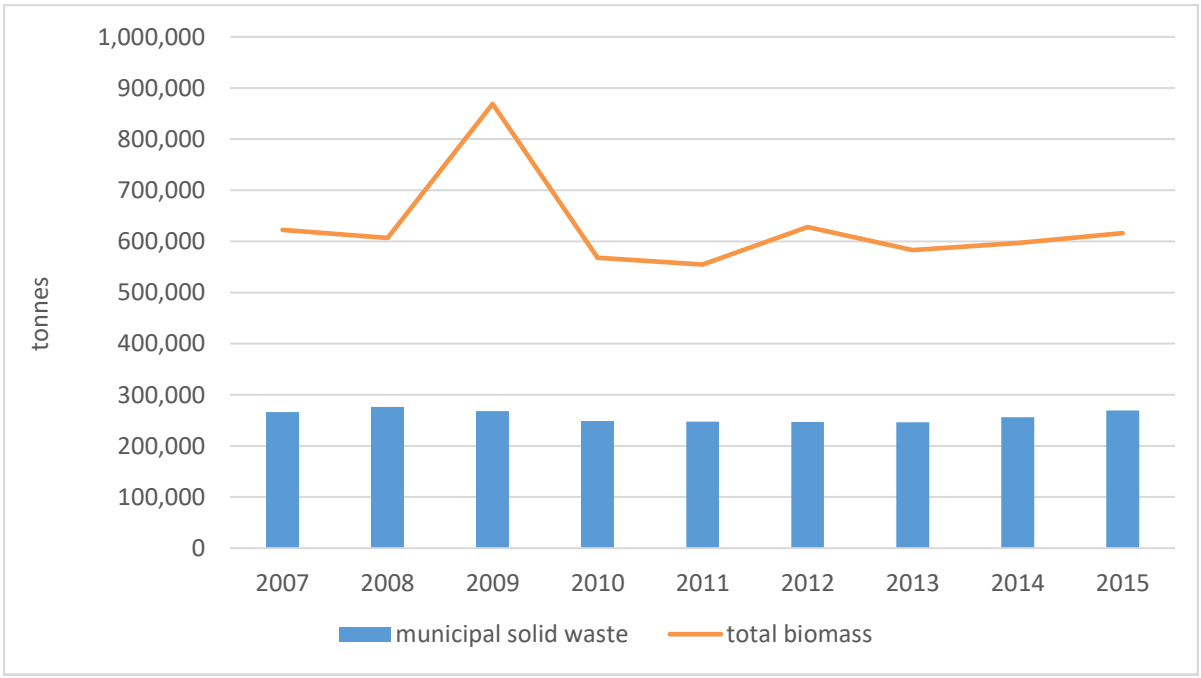
Domestic extraction consists of biomass, which is further subdivided into non-fodder crops, fodder crops, wild fish catch and hunting, and non-metallic minerals, mainly limestone. On its part domestic extraction has seen a decline of 29 % during the period under review. This has been largely due to a drop in limestone extraction, which in 2015, fell by 29 % when compared to 2007 levels. When compared to the generation of C&D waste it emerges that whilst C&D waste generation trends mirrored those for extraction up to 2010, the latter has been in general decline thereafter possibly at a steeper rate than the corresponding decline in C&D waste generation with a slight deviation in 2015 as shown in Figure 6.20.

Figure 6.20: Mineral extraction and C&D generation

Source: *ERA and NSO*

Looking at biomass, local biomass production was nearly unchanged during the period under review whilst imported biomass increased by 7 % during the same period. Exported biomass, on its part, registered a sizeable increase of 53 %. A comparison between net direct biomass input (local + imports – exports) and MSW generated shows that the latter constitutes an average of 42 % of the former as shown in Figure 6.21.

Figure 6.21: Biomass consumed vs MSW generated



Source: *ERA and NSO*

6.4.2 Resource productivity

Resource productivity is a measure of the total amount of materials directly used by an economy (measured as domestic material consumption (DMC)) in relation to GDP. It provides insights into whether decoupling between the use of natural resources and economic growth is taking place. Resource productivity (GDP/DMC) is the European Union (EU) sustainable development indicator for policy evaluation. It is expressed by the amount of GDP generated per unit of direct material consumed, i.e. GDP / DMC EUR/kg[39] and measures the efficiency with which natural resources are used by the economy. It is also an indicator as to whether economic growth is compatible with a more efficient use of the natural resources from the environment.[40]

In the European Union (EU), resource productivity increased to 2.00 EUR/kg in 2015 from 1.48 EUR/kg in 2000 which equates to an increase of 35 % in real terms.[41] In Malta, as at 2015, resource productivity stood at 1.44 EUR/kg, a decline of 24 % over 2007 levels. The main agent behind the fluctuations in the resource productivity was the performance of the DMC. Resource productivity in Malta peaked in 2010 at 2.29 EUR/kg as shown in Figure 6.22. When compared to GDP and DMC one observes that from 2010 we have witnessed continued increase in GDP, a declining trend in resource productivity and an increasing trend in DMC. There are indications of decoupling between resource use and economic growth between 2007 and 2011. However, given that the increase in DMC was higher than that of the GDP, these indications disappeared by 2015 when the resource productivity reverted to 2014 levels. To a certain extent, this shows that we are currently being 'wasteful' with our resources and that decoupling between economic growth and environmental protection is not yet happening.

When compared to DMC, GDP increased at a relatively stable rate averaging 4 % per annum. From 2004 to 2008, GDP increased by an average of 3 % per annum. The decrease that was noted in 2009 (-2.5 per cent) occurred as a result of the global economic slowdown that started in late 2008. Economic recovery was registered in 2010, picking up momentum in 2014 (+8 per cent) and 2015 (+7 per cent).[42]

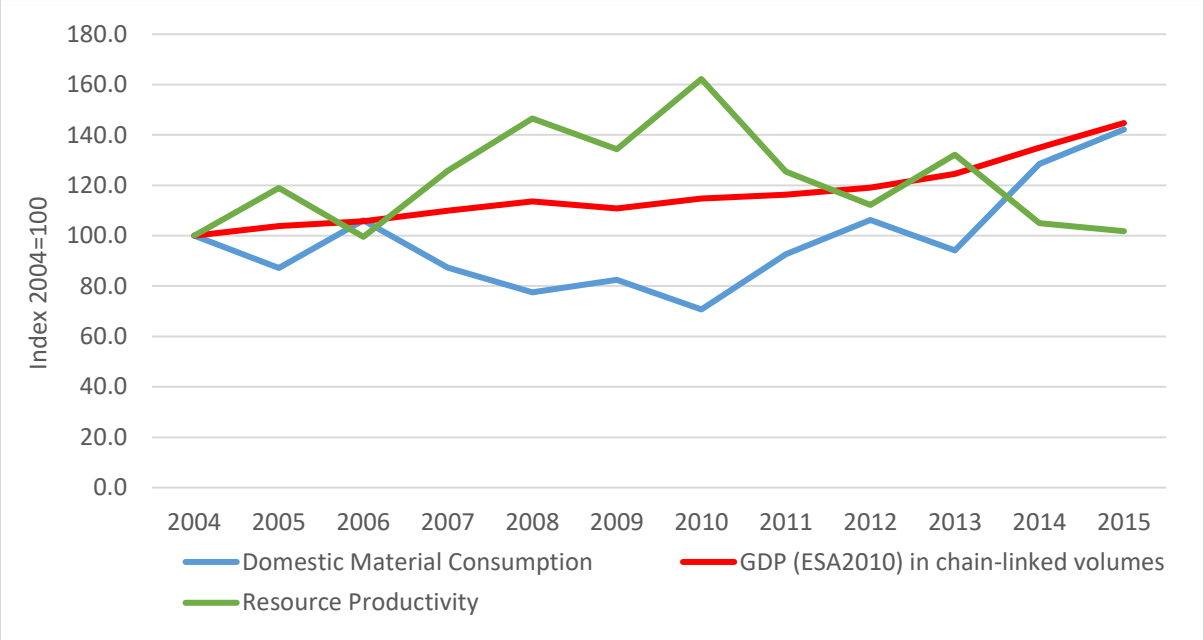
[39] Eurostat 2017f.

[40] Eurostat 2016.

[41] Ibid.

[42] NSO 2017.

Figure 6.22: Resource Productivity 2004-2015



Source: *NSO*

The DMC showed an undulating trend throughout the time series. In general a decrease of 33.4 per cent in registered amounts can be noted from 2006 to 2010 mainly due to a sharp rise in exports. Thereafter the DMC has shown an increase which was mainly brought about by imports. In 2015 DMC was 101 per cent higher than in 2010.[43]

6.5 FUTURE OUTLOOK

The forthcoming years are likely to be characterised by a set of waste management initiatives that will aim to move Malta's operations up the waste hierarchy. There is no doubt that the immediate future will be characterised by the targets that Malta is obliged to achieve by 2020 and which are hereby recast for ease of reference, together with figures presenting Malta's performance status for each of the targets:

i. recycling 50 % of paper, plastics, metal and glass waste from households by 2020;

ii. allowing only 35 % (based on 2002 levels) of biodegradable municipal waste to be landfilled by 2020;

iii. recovering 70 % of C&D waste by 2020;

iv. a minimum of 55 % of packaging waste generated is recovered by way of recycling by 2013;

v. collecting 65 % of the average weight of electrical and electronic equipment placed on the national markets by 2021;

vi. achieving 55 %, 70 %, 80 % and 85 % re-use and recycling 75 %, 80 % and 85 % recovery for electrical and electronic equipment placed on the national markets by 2018;

[43] Ibid.

vii. collecting 45 % of waste portable batteries placed on the market 2016;

viii re-using and recovering 95 % of the average weight per vehicle per year by 2014.[44]

Without beating around the bush it is safe to say that this is a major challenge which requires determined action not least to incentivise separation and recycling initiatives as well as to discourage practices related to the production of mixed residual waste.

Government has committed to address a number of waste related initiatives including:

a. the relocation of the Sant'Antnin waste treatment facility to Magħtab;
b. the roll-out of separated organic waste collection nationally;
c. increased enforcement within ERA as well as in collaboration with the Administrative Law Enforcement (ALE);
d. the setting up of an Environmental tribunal or court.

Landfilling is the least sustainable waste management option and requires the allocation of fresh land to address the persisting demand; land which is scarce and constrained to sites closer to urban areas.

The 2030 targets, currently being negotiated, will be more stringent and will require more sustainable waste management practices. This will place additional demands on what we need to achieve. Hence it is imperative that:

1. the Circular Economy Action Plan needs to be developed into a series of measures that will achieve its objectives, in seeking to reduce the waste arising.
2. the potential of waste management becoming a key element of the green economy needs to be seriously considered. The private sector seems ripe enough to play a more active role whilst there are opportunities for private sector investment that can not only contribute towards Malta's targets, but also to set up and nurture a waste management industry that produces value added goods; extended producer responsibility (EPR) schemes will be required to extend their responsibility for all the waste that is generated from the stream they are responsible for. Again, if need be, there could be some form of incentive for performance beyond the targets to accompany such responsibility;
3. the reuse of construction and demolition waste is given its due priority. As the major waste stream as well as in the light of the focus it received within the Circular Economy Action Plan merits follow-up. This can be achieved through planning policies as well as through economic instruments that promote the reuse of this material;
4. the organic bag rollout nationally happens within the shortest timeline possible and that residual waste collection frequency is progressively reduced. Starter kits and bags for the disposal of organic waste are incentives that should be initially considered to facilitate the transition;

[44] MSDEC 2014.

5. central and local government work closer together to bring about the necessary changes that are required to enhance public attitudes and behaviour, and in achieving waste management practices that are effective at source. Local Councils need to play a more active role in waste management. Economies of scale can only be achieved through the aggregation of collection areas. The Local Councils Act already provides for the concept of regions and this Act may need to be amended to reflect this new responsibility. Current Local Council contracts need to be phased out and replaced with new conditions that specify amongst others (i) the quality of the refuse collection vehicle, (ii) a price that includes landfill and facility gate fee and (iii) amended collection schedules;
6. planning guidance already obliged condominium to have a space dedicated for waste storage where more than 16 units exist. It is time to consider lowering this threshold for new condominium in recognition of the importance of waste management as well as to facilitate collection by waste collectors. It is also important for periodic checks to be made to ensure that, after construction, such spaces remain designated for waste management purposes;
7. consideration is also given to the unsightly practice of garbage bags being deposited along pavements. Better urban design could factor in collection points that reduce unsightliness and also retrofit urban areas who were not subject to current waste space requirements;
8. effective enforcement at both a local and central government level is mandatory. ERA as the regulator for waste management needs to ensure that all authorised waste actors are conforming to the conditions laid. It is no longer acceptable either, for society not to collaborate with Local Council collection schedules. Taking out the wrong bag on the wrong day will become a littering offence. However for such littering regulations to be effective there needs to be heightened enforcement;
9. a reform in the collection of commercial waste is undertaken as set out in Malta's Waste Management Plan to ensure that such entities do not remain a burden on the Local Council's waste management system;
10. the planning for a supporting landfill to the infrastructure outlined in (11) below is found. Landfill void space for the interim period between the closure of the current landfill and the completion of the solution from (11) below needs to be catered for;
11. an infrastructural solution for the treatment of that portion of waste that remains beyond the targets Malta has to achieve under its various waste related obligations.

There is no doubt that in order to achieve this agenda, there is a need for a better financing model for waste management. In the absence of economic instruments that differentiate between different types of waste, and that recognise the service that is provided, national financing will need to be increased substantially.

The point where Malta stands today from a waste management perspective is a far cry from where it should be in order to reach its 2020 targets. Unless a wholesome reform is undertaken which brings about the required (i) operational, (ii) cultural and (iii) financing change, then Malta will be in grave danger to miss these targets and to face infringement procedures.

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