Domestic Material Consumption for Malta: Results

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By Ian Gazley (Environmental Accounts Branch Head, Office for National Statistics, United Kingdom) and Stefano Moncada (Senior Research Officer, Policy Coordination Unit MEPA)

These results are the outcome of a review[1] of a methodology and data sources used in the production for Malta of the sustainability indicator, Domestic Material Consumption (DMC). The original document[2] was an attempt from the MEPA to calculate the DMC for Malta, following EUROSTAT methodology and adapting it to the Maltese context. The review of this approach and methodology was conducted in July 2008 by the Office for National Statistics, United Kingdom. Following this review, a time series for DMC and associated data from 2004 to 2006 was made available for Malta for the first time, as also shown by Table 1.

Indicator	2004	2005	2006	% change
Domestic material consumption	3,422,946	3,718,648	3,256,961	- 4.8
Of which, biomass	662,682	568,908	522,867	- 21.1
minerals	1,704,889	1969,749	1,757,113	+ 3.1
Domestic extraction	1,246,498	1,605,430	1,114,368	- 10.6
Domestic material input	4,065,222	3,931,036	3,454,442	- 15.0
Imports	2,818,724	2,325,605	2,340,074	- 17.0
Exports	642,277	212,388	197,481	- 69.3
GDP (constant 2000 prices) (€ 000)	4,021,374	4,150,526	4,291,367	+6.7

Table 1. Summary of main results in calculating the DMC – changes between 2004 and 2006

Overall, the results show that DMC in Malta has fallen 4.8 per cent between 2004 and 2006. Over the same period, GDP at real prices rose 6.7 per cent suggesting that economic growth is becoming decoupled from material use. The following looks first at the components of the DMC indicator, Domestic Extraction (DE), imports and exports before, moving on to consider DMC and other material flow indicators.

DE comprises the mass of material extraction associated with biomass, which includes such items as fish[3] and crops, and the mass of material associated with mineral extraction. DE fell 10.6 per cent between 2004 and 2006 from 1,246,498 tonnes to 1,114,368 tonnes. This fall is driven by lower levels of mineral extraction activity, which forms the largest proportion of domestic extraction in Malta.

Between 2004 and 2006, the percentage of total extraction associated with minerals has been approximately 90 per cent, with the remainder resulting from the extraction of biomass, as shown by Table 2.

%	2004	2005	2006
Biomass/DE	9.2	7.6	11.6
Minerals/DE	88.4	92.4	90.8

Table 2. Comparing biomass and minerals with domestic extraction for the years 2004, 2005 and 2006

Minerals extraction in Malta comprises of softstone, sand and gravel. These components have been separately identified within the accounts. Total mineral extraction fell 13.0 per cent between 2004 and 2006 largely driven by

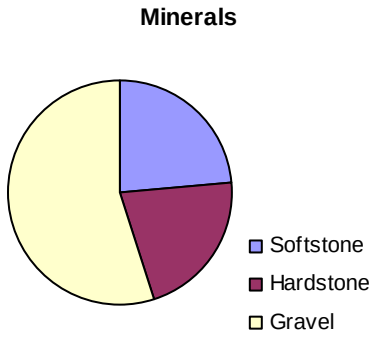
1 Moncada et all, 2008.

2 Ibid

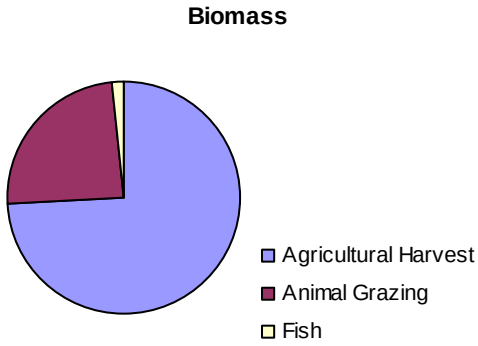
3 The total fish catchments do not contain fish coming from fish farms

a 17.9 per cent fall in gravel extraction, although extraction of softstone and sand also fell over the same period, by 7.7 per cent and 17.9 per cent respectively.

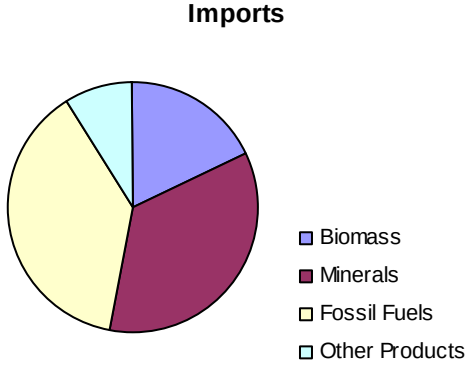
The data shows that in 2006 extraction of softstone accounted for 23.7 per cent of all minerals, while sand and gravel accounted for 21.3 per cent and 55.0 per cent respectively. These proportions are broadly stable throughout the period 2004 and 2006 and are supported by information on the turnover of these industries in 2004. Data supplied by the Malta NSO shows that as a proportion of total turnover related to the quarrying and concrete manufacture industries (Standard Industrial Classification 14.11, 14.21, 14.5, 26.61, 26.63, 26.66), the turnover of the quarrying industry i.e. softstone was 21.4 per cent while the turnover of the concrete manufacturing industries i.e. sand and gravel was 78.6 per cent.



Extraction of biomass related to agricultural activity, animal grazing and fishing has increased by 12.6 per cent between 2004 and 2006. Much of this increase is a result of higher levels of animal grazing, which rose 47.4 per cent from 21,327 tonnes to 31,446 tonnes. Over the same period the mass of materials associated with the agricultural harvest and fish extraction also rose, by 4.7 and 3.6 per cent respectively. This may reflect the increase in efficiency of the agricultural and fishing sectors, also due to an effective use of EU structural funds and improved competence over this period.



The mass of materials and biomass extracted from the domestic environment form only part of the picture when considering the use of the materials in an economy. It is also important to measure the impact of trade in terms of exports, which form

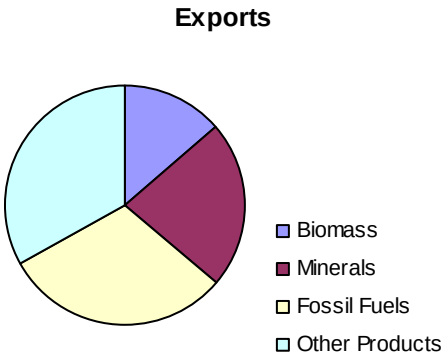


part of rest of the world consumption and imports, which form part of domestic consumption.

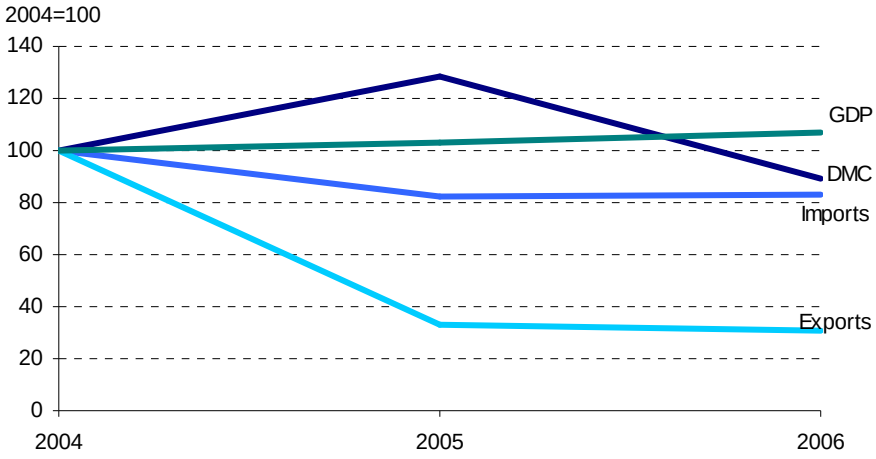
Since 2004, the mass of imports used in Malta's economy has fallen 17.3 per cent largely driven by fewer imports of fossil fuels, which fell 32.3 per cent. This large fall is a result of fewer imports of petroleum oils Harmonised System (HS) code 2710. There have also been smaller falls in imports of biomass (26.0 per cent) and other products (10.2 per cent). Imports of biomass fell largely as a result of less imports of grains, seeds, straw and fodder (HS code 12), possibly reflecting higher levels of animal grazing in domestic extraction. The fall in imports of other products was driven by fewer imports of toys and games (HS code 95).

Direct material input (DMI) is an indicator that measures the input of materials directly used by the economy that is all materials that form part of products or are used in production and consumption activities. DMI equals used extraction plus imports. Between 2004 and 2006, DMI fell by 15.0 per cent following a reduction in the mass of imports to the country.

In Malta, the mass of exports has fallen 69.3 per cent between 2004 and 2006. Three of the four major product types were lower in 2006 than in 2004, in particular fossil fuels show a 84.1 per cent fall. As with imports, lower levels of fossil fuel exports were driven by less trade in petroleum oils. Exports of minerals fell because of fewer exports of glass fibres (HS 7019), while exports of other products fell following a fall in the mass of toys and games exported.



Domestic Material Consumption is equal to DMI less the mass of goods exported from Malta. This indicator helps signal the impact of demand for materials in the economy. DMC has been adopted by Eurostat as a

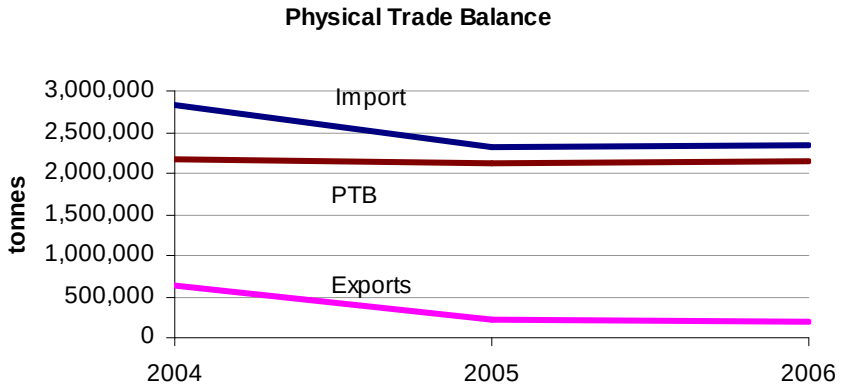


key sustainable development indicator.

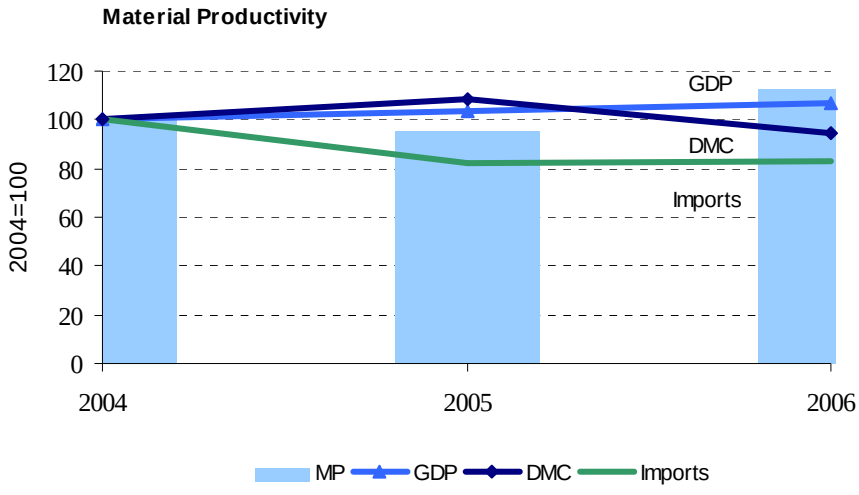
Between 2004 and 2006, DMC has fallen 4.8 per cent. This fall is a result of lower levels of both DE and imports. However, imports show the greatest reduction in both percentage and absolute terms.

Using the data collected for the DMC calculation it is possible to provide estimates of other indicators useful for providing information on how materials are used in the economy and the impact of trade on material use.

The physical trade balance shows the relative importance of imports and exports in material flows. It measures the difference between the total mass of imports and the total mass of exports. In contrast to balance of payments methodology the PTB is shown as imports less exports, this is because the flow of materials is the reverse of the flow of financial transactions. Since 2004, the PTB has fallen 1.9 per cent largely as a result of lower levels of fossil fuel imports.



Material productivity is the relationship between material use and economic activity in terms of efficency. The indicator is calculated by dividing Gross Domestic Product in real terms by DMC. Overall, the material efficiency of Malta shows an increase during the period 2004 – 2006 the chart for Malta shows an overall increase in material productivity, which suggests some progress towards increased sustainability.



Material flow account for Malta

	2004	2005	tonnes 2006
Domestic extraction			
Biomass			
Agricultural harvest	91,294	87,331	95,572
Animal grazing	21,327	33,243	31,446
Fish	2,006	2,142	2,078
Total biomass	114,627	122,716	129,096
Minerals			
Limestone			
Softstone	217,285	252,450	234,000
Sand	255,007	343,026	209,472
Gravel	659,578	887,239	541,801
Total minerals	1,131,871	1,482,714	985,273
Total domestic extraction	1,246,498	1,605,430	1,114,368
Imports			
Biomass	567,895	478,308	420,392
Minerals	697,422	546,008	816,775
Fossil fuels	1,324,012	1,089,807	896,855
Other Products	229,396	211,482	206,052
Total imports	2,818,724	2,325,605	2,340,074
Exports			
Biomass	19,840	32,116	26,621
Minerals	124,404	58,974	44,934
Fossil fuels	382,959	39,841	60,810
Other Products	115,074	81,458	65,116
Total exports	642,277	212,388	197,481
Indicators			
Physical Trade Balance (imports-ex	2,176,448	2,113,217	2,142,592
Direct Material Input (domestic extraction + imports)	4,065,222	3,931,036	3,454,442
Domestic Material Consumption (domestic extraction + imports - exports)	3,422,946	3,718,648	3,256,961
of which			
biomass	662,682	568,908	522,867
minerals	1,704,889	1,969,749	1,757,113
Material Productivity (2004=100)	100	95	112

Reference

Moncada, S., Micallef, S., Tabone, C., Camilleri, M., 2008. Domestic Material Consumption: Calculating the Domestic Material Consumption for the Maltese Islands. MEPA: Floriana.

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