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signed by Mr Jordi AYET PUIGARNAU, Director

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Energy Union Factsheet Malta
Accompanying the document
COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND
SOCIAL COMMITTEE, THE COMMITTEE OF THE REGIONS AND THE
EUROPEAN INVESTMENT BANK
Third Report on the State of the Energy Union

Delegations will find attached document SWD(2017) 405 final.

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Third Report on the State of the Energy Union

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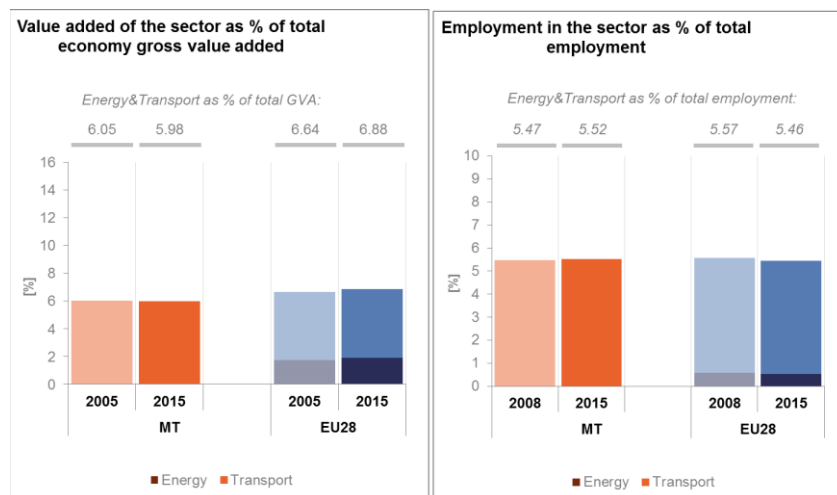


Malta

Energy Union factsheet¹

1. Macro-economic implications of energy activities

Energy and transport are key sectors for the overall functioning of the economy as they provide an important input and service to the other sectors of the economy. The transport sector² accounts for 6% of the total value added of Malta and for 5.5% of total employment³ in 2015. Unfortunately, the value added and employment statistics for the energy sector in Malta are not available.



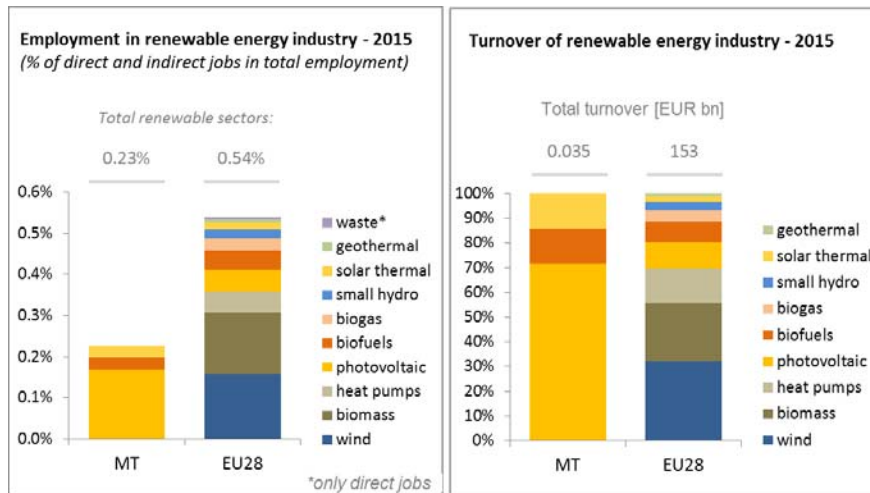
(source: Eurostat)

According to the 2016 Renewable energy Eurobarometer of EurObserver'ER, in 2015 the share of direct and indirect renewable energy related employment in total employment of the economy in Malta was at about 0.23%, below the EU average of 0.54%. The turnover of the renewable energy industry in the same year was estimated at around EUR 0.035 billion, the largest part being attributed to photovoltaic (71.4%) followed by biofuels and solar thermal industries in equal parts (14.29%).

¹ The indicators used in this country factsheet largely build on indicators developed for the Commission Staff Working Document "Monitoring progress towards the Energy Union objectives – key indicators" (SWD(2017) 32 final) https://ec.europa.eu/commission/sites/beta-political/files/swd-energy-union-key-indicators_en.pdf

² Gross value added and employment in NACE H-Transportation and storage

³ National Accounts, Eurostat

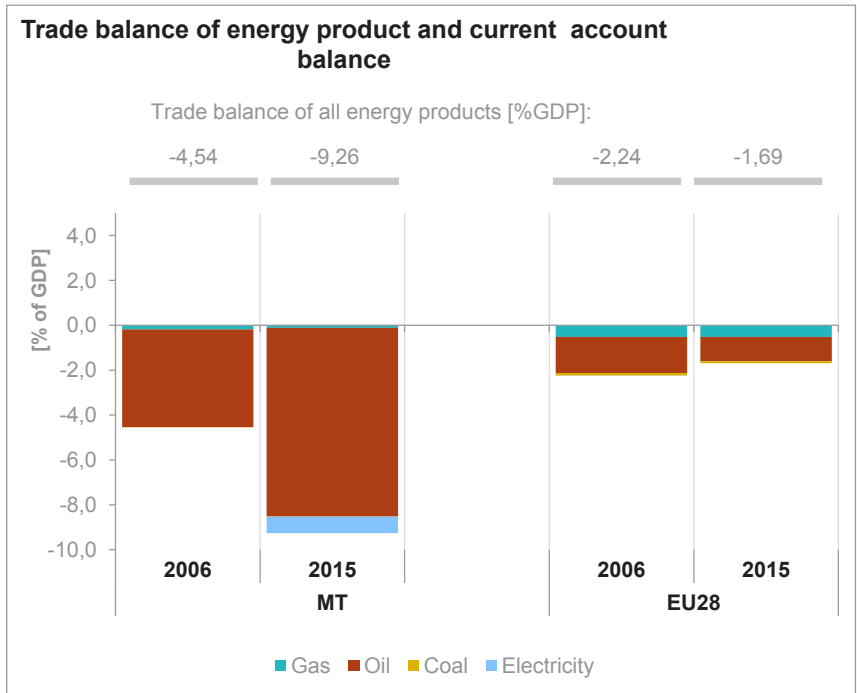


(source: EC based on Euroserv'Er and Eurostat)

The decarbonisation of the energy and transport sectors will require significant investments and economic activity beyond the remit of these sectors themselves. The energy transition implies a structural shift in economic activity. Energy-related investment and jobs will in part migrate from traditional fossil fuel based activities towards construction, equipment manufacturing and other services related to the deployment of low carbon and clean energy technologies. At the moment, the efforts related to the low-carbon and clean energy transition in sectors beyond energy can only be partially quantified and are therefore not included.

The overall investment is usually taken as an indication of the level of efforts and challenges in the energy sector. However, data is not available for Malta for this indicator.

In terms of trade, Malta is nearly fully dependent for its energy consumption on the imports of fossil fuels, i.e. import of petroleum products. In addition, despite the absence of refinery capacity, Malta is also a significant player in the international trade in petroleum products. The energy dependency is reflected in a much larger trade deficit in energy products for Malta than for the EU as a whole. The deficit has more than doubled in terms of GDP from 2006 to 2015, namely from 4.5% to 9.3 % of GDP. Both the size and increase in the deficit are mainly accounted for by petroleum products. However, in 2015 the 200MW electricity interconnection from Sicily has entered into operation leading to trade deficit for electricity of 0.73% of GDP. There is also a small trade deficit related to imports of liquefied petroleum gas. Malta started to import LPG in 2017 with the new gas-fired power plant coming into operation. The introduction of gas and electricity imports is likely to structurally reduce the trade deficit in petroleum products. However, the "stock effects" corresponding to Malta's role in the international trade in oil products (i.e. storage on the island and in tankers under the Maltese flag) complicates comparisons of oil products and overall energy trade deficit levels between years.

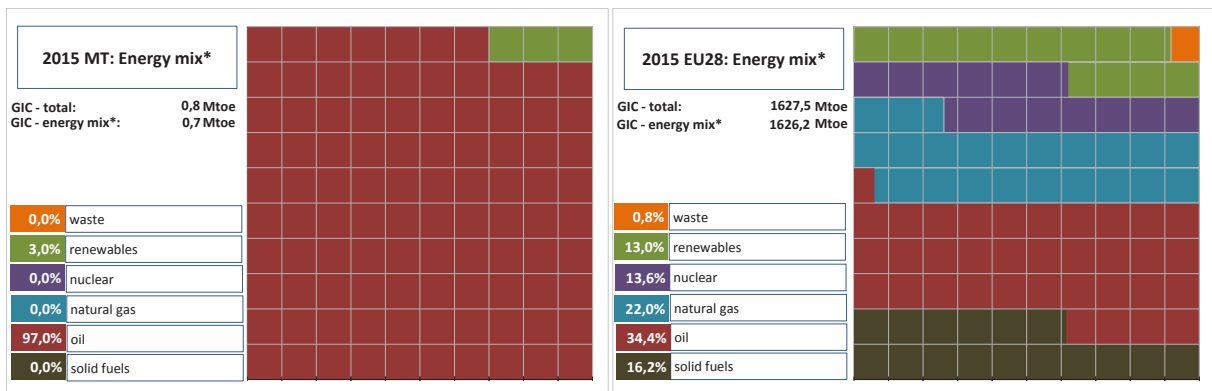


(source: Eurostat)

2. Energy security, solidarity and trust

2.1. Energy Mix

With 97 % use of petroleum and products, the energy mix of energy primary products in Malta differs strongly from the average energy mix in the EU. The increase of renewable production and the commissioning of the gas-fired plant in April 2017 will further diversify Malta's energy mix. There is already a strong decrease from the 99% oil product dependency in recent years, enabled by the electricity interconnector with Italy commissioned in early 2015.



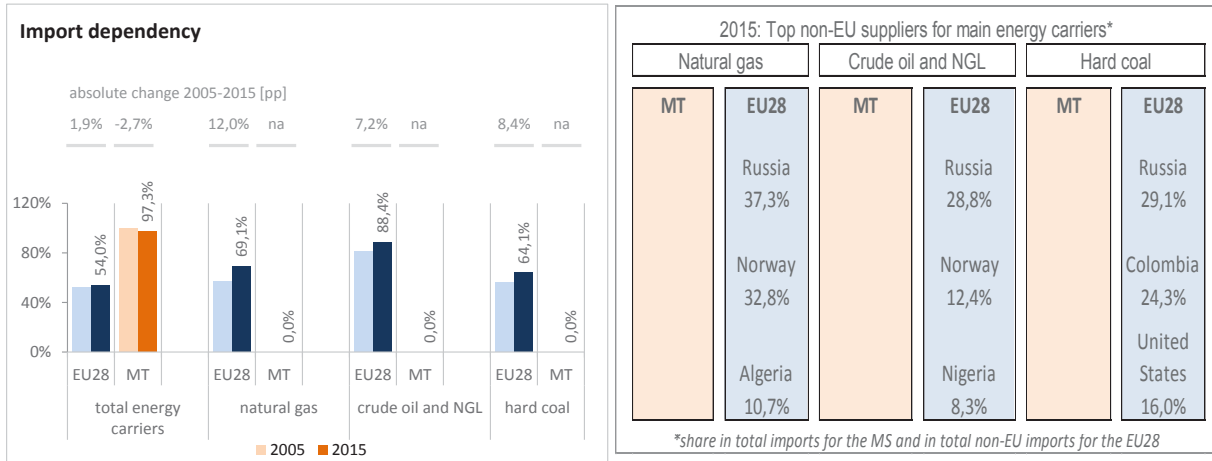
*energy mix as share share in GIC-excluding electricity and derived heat exchanges , GIC=gross inland consumption

(source: Eurostat)

2.2. Import dependency and security of supply

Malta has an import dependency ratio of 97.3%, the indigenous production being represented by renewables only. There is no data on the main trading partners of Malta regarding crude oil and hard

coal since Malta imports oil refined products only. In 2015 there was no usage of natural gas, however this will change with the use of gas-fired plants (in 2017, Malta commissioned a new gas-fired plant and converted an existing power plant to run on natural gas instead of heavy fuel oil), which will receive LNG from a floating storage unit. Additionally, the interconnector with Italy commissioned in early 2015 enabled electricity imports from and through Italy of 1054 GWh in 2015.

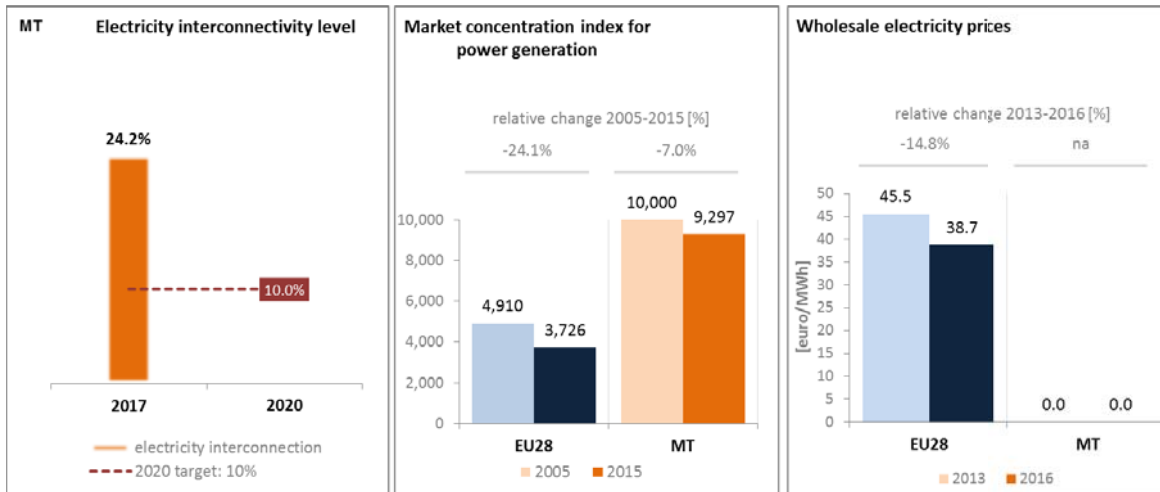


(source: Eurostat)

3. Internal market

3.1. Interconnections and electricity wholesale market functioning

3.1.1. Electricity



source: EC services based on ENTSOE

source: EC services based on Eurostat

source: EC services based on Platts and European power exchanges

The commissioning of the electricity interconnector between Malta and Italy in early 2015 (supported by the European Energy Programme for Recovery) marked an end to the isolation of the

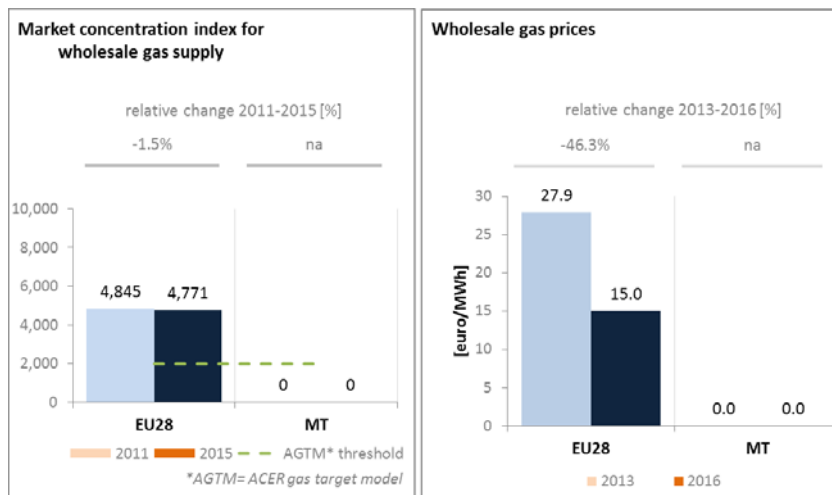
Maltese electricity grid from the rest of Europe. As a result, Malta's electricity interconnection level⁴ increased from 0% to over 24%.

Due to the size of its electricity market, Malta has been granted large derogations from the requirements of the Electricity Directive on unbundling of distribution system operators, third party access and market opening and a wholesale market are not in place. Enemalta PLC is a vertical integrated company which is the designated distribution operator and remains the main producer of electricity in Malta. Dispatching and balancing are also carried out by Enemalta PLC.

3.1.2. Gas

In support of the transition from the use of heavy fuel oil to gas-fired electricity generation, the European Commission has, in January 2017, approved under EU state aid rules, the Maltese plans to pay Electrogas Malta, for providing energy to the Maltese electricity company Enemalta. The measure compensates Electrogas for the additional cost of fulfilling public service obligations with a new facility. The facility encompasses a floating liquid natural gas storage unit and a new combined cycle gas fired power plant. The storage unit supplies gas to the new power plant as well as to an existing plant.

Malta is involved in one Project of Common Interest (gas): connection of Malta to the European Gas network (gas pipeline interconnection between Delimara (Malta) and Gela (Italy)). The basic design and route identification study have been completed and have been co-funded under the CEF programme. The permitting procedures in Malta and Italy have started, and related studies, preliminary marine survey, FEED study, EPC tender preparation and financial engineering are being prepared.



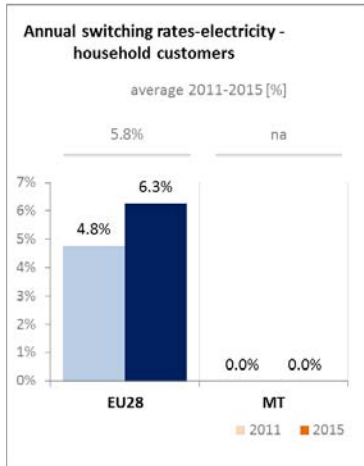
(source: ACER for the left graph and European Commission services based on Platts, gas hubs, Eurostat for the right graph)

⁴ The interconnectivity level is calculated as a ratio between import interconnection and net generation capacities of the country (i.e. the 2017 value is the ratio between simultaneous import interconnection capacity [GW] and net generating capacity [GW] in the country at 11 January 2017, 19:00 pm as resulted from ENTSO-E Winter Outlook 2016/2017)

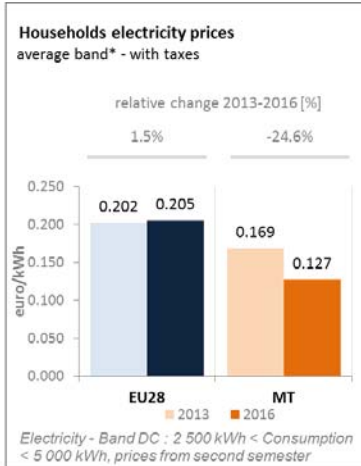
3.2. Retail electricity and gas markets

3.2.1 Electricity

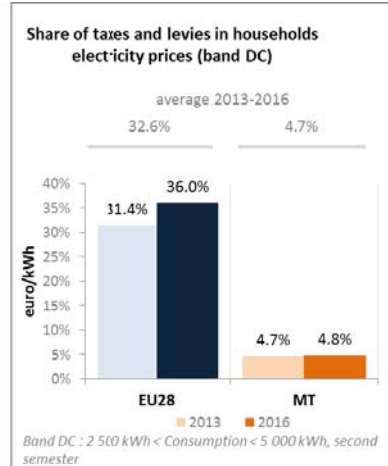
Enemalta PLC is 100% owner of the distribution network. The generation sector is open to competition but market size had restrained development. The electricity retail sector is not open to competition and therefore customer switching is not possible in Malta (the physical and structural constraints are a barrier to an effective market). All consumers of electricity are on regulated retail tariffs which have decreased since 2013. In 2015, retail electricity prices for households were well below European average. Malta is proceeding with electricity smart meter roll out, with about 75% of household consumers having an electricity smart meter in 2015⁵.



(source: ACER)



(source: Eurostat)



(source: Eurostat)

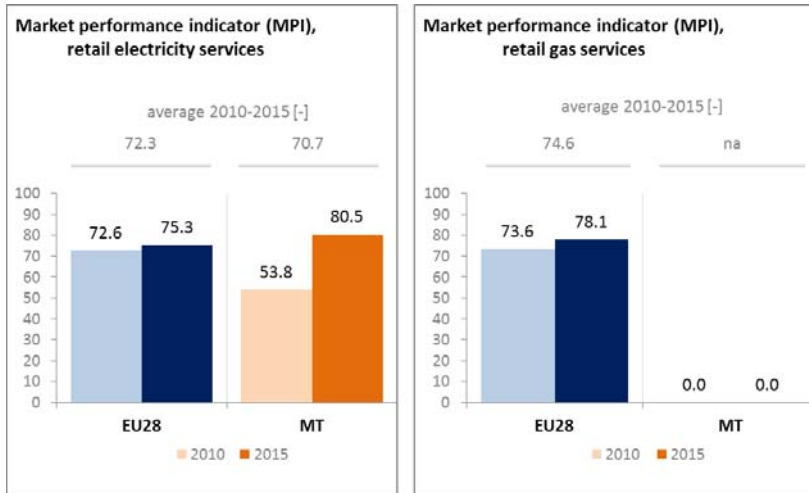
3.2.2. Gas

Natural gas represents a negligible share of households' energy consumption. Therefore, Malta has no significant retail market for households.

3.2.3. Market performance indicators

According to the periodical survey of DG JUST, the Maltese consumers' appreciation of the services received on energy retail markets has significantly increased in recent years and has surpassed the EU average.

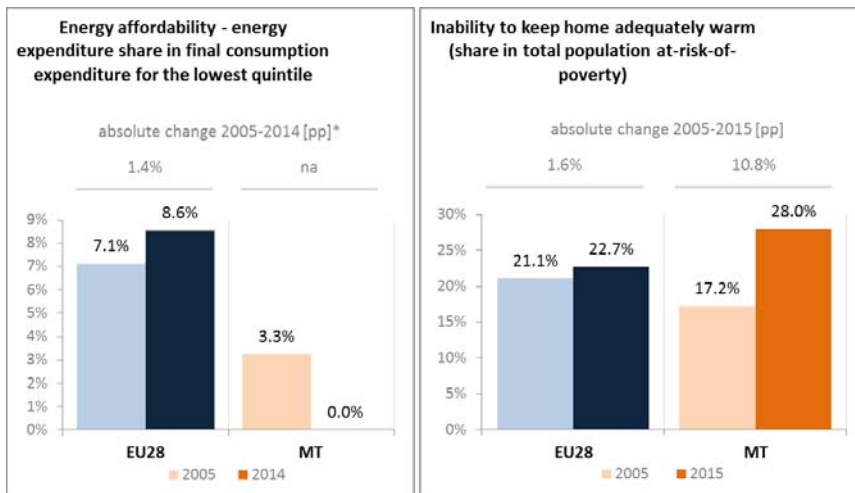
⁵ according to ACER Market Monitoring report 2016



(source: DG JUST survey)

3.3. Energy affordability

Although energy expenditure for consumers in Malta was relatively low in 2008⁶, compared to the EU average, the inability to keep homes adequately warm has increased in the last decade, even despite the lower than EU average electricity prices and energy consumption in the residential sector.



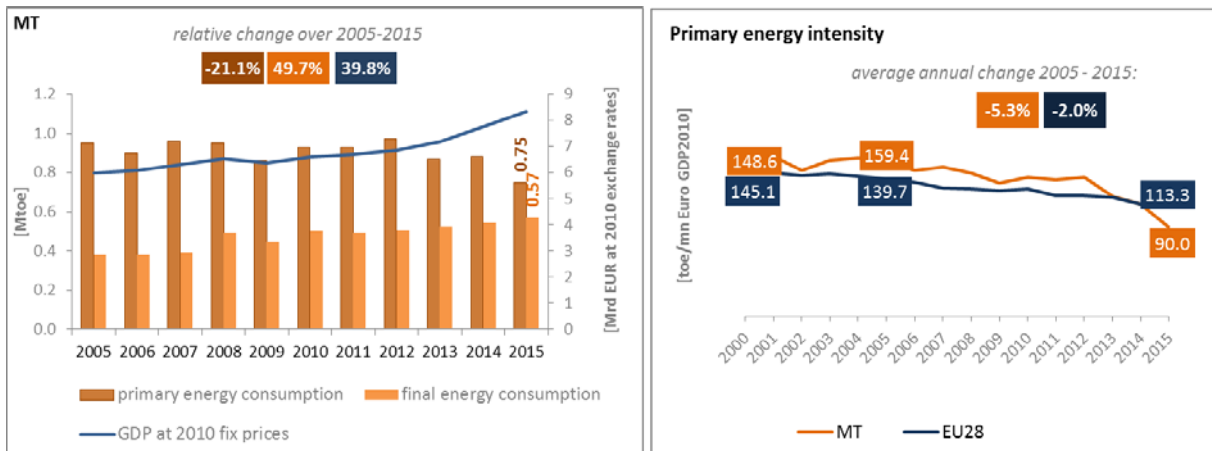
(source: ad-hoc data collection of DG ENER based on HBS with the support of Eurostat and national statistics)

4. Energy efficiency and moderation of demand

Malta managed to reduce its primary energy consumption over the last years, despite significant growth in GDP. This resulted in a decrease of primary energy intensity in Malta since 2005 at a faster pace than for the EU as a whole, and it is now lower than EU average. One of the main factors for the decrease in primary energy consumption is the recent investments to increase the efficiency of the Maltese power plants and the commissioning of an interconnector between Malta and Italy.

⁶ In May 2017 when this factsheet has been prepared, 2008 was the last reported year on household expenditure in Malta.

Although primary energy intensity decreased over the 2005-2015 period, Malta has experienced one of the largest increases in final energy consumption (3%) in 2015 among EU Member States.

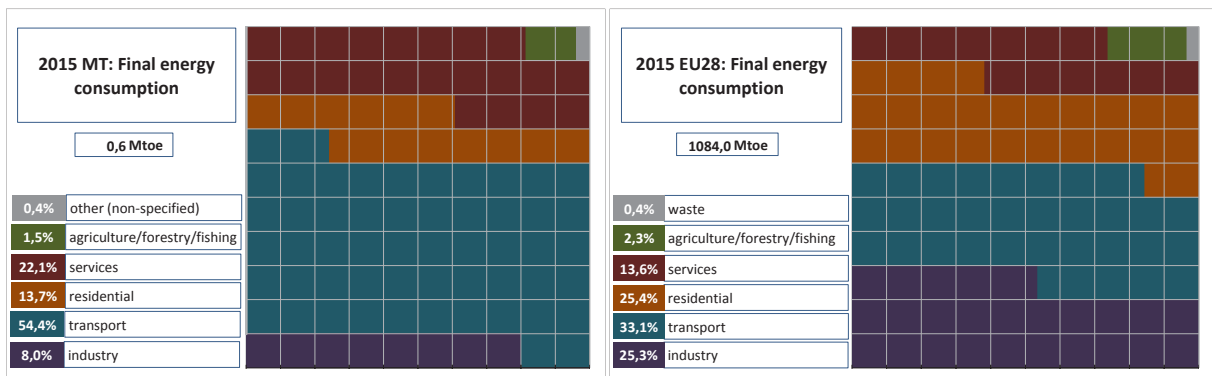


(source: Eurostat)

In 2015, transport was by far the largest energy consuming sector representing a 54.4% share in the total final energy consumption, which is well above the EU average (i.e. 33.1%). Malta's final energy consumption in the transport sector increased by 5.3% from 2005 to 2015. Malta is facing congestion problems due to the high use of private cars and the low share of public transport.

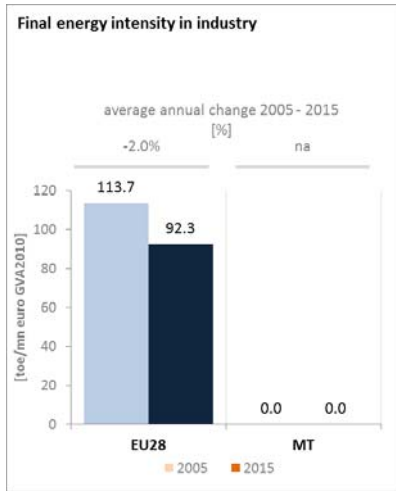
Energy consumption in industry, when reported to gross value added of the sector, is lower in Malta than for the EU as a whole, and could be explained by a sectorial specialisation in the less energy-intensive subsectors. Specific energy consumption by households is below EU average due to average temperatures being the highest in Europe which results in a very low heating demand. Nevertheless, energy efficiency measures would also contribute to the comfort levels of the buildings also during summer and could help reducing the high share of people in Malta which cannot keep their houses adequately warm or cooled.

Services, representing a large part of the Maltese economy, consumed over 22% of final energy consumption, well over the EU average of 13.6%. Malta should focus on this sector, as the energy consumption of this sector increased considerably from 2005-2015.

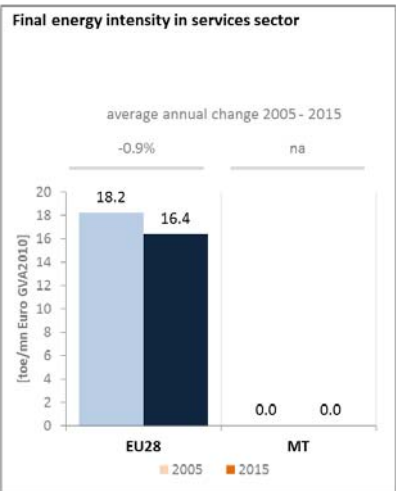


(source: Eurostat)

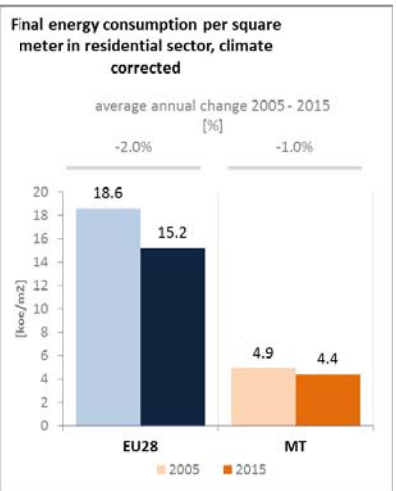
There is no available data for final energy intensity in the industrial and services sectors. In the residential sector, final energy intensity consumption (below EU average) decreased over the period 2005-2015.



(source: Eurostat)

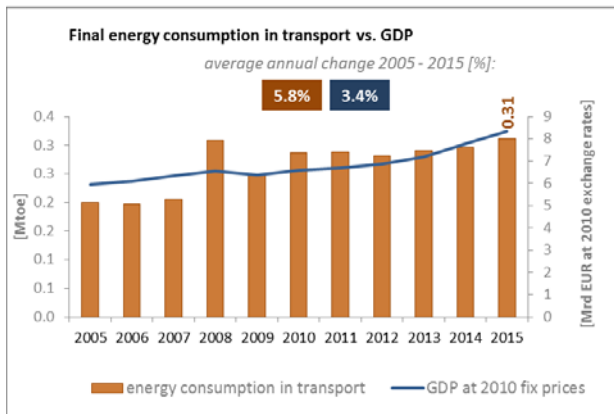


(source: Eurostat)

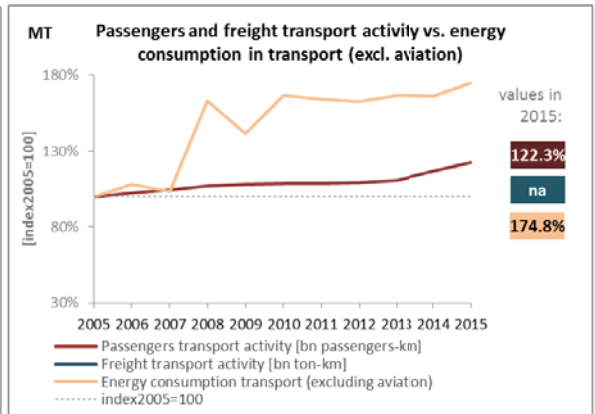


(source: Odyssee database)

Malta notified in its latest Annual Report that in 2016 the government decided to extend some of its current energy efficiency programmes, e.g. grant schemes for the replacement of old cars with more environmentally friendly ones, and provided retrofitting of street lighting, incentives for building envelope improvement, tax credits for CHP technology, and the grant scheme for solar water heaters.

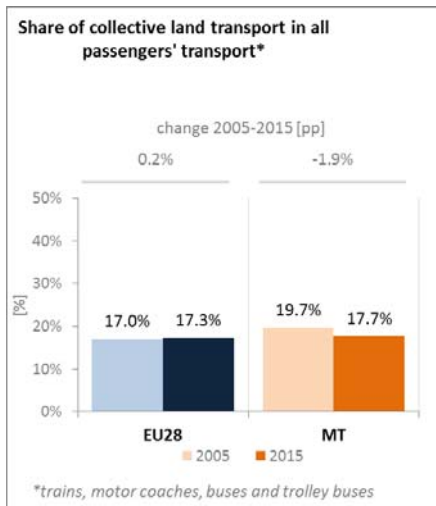


(source: Eurostat)



passengers transport activity=Private cars + bus + rail + tram & metro
freight transport activity=road+rail+inland waterways+pipeline

(source: Eurostat and DG MOVE pocketbook)



(source: Eurostat)

In 2016, the Government adopted an ambitious National Transport Strategy with a 2050 horizon and an Operational Transport Master Plan to 2025. The adoption of the Strategy and Master Plan was an ex-ante condition for unlocking ESIF funding to the transport sector. The Strategy and Master Plan are comprehensive while also putting significant emphasis on the challenges of road congestion and climate change. The documents include (the continuation of) a diverse set of measures such as infrastructure works, intelligent transport systems, fleet renewal, modal shift and incentives for behavioural change. The estimated budget is EUR 231 million for 2016-2020 and an additional EUR 397 million for 2021-2025.

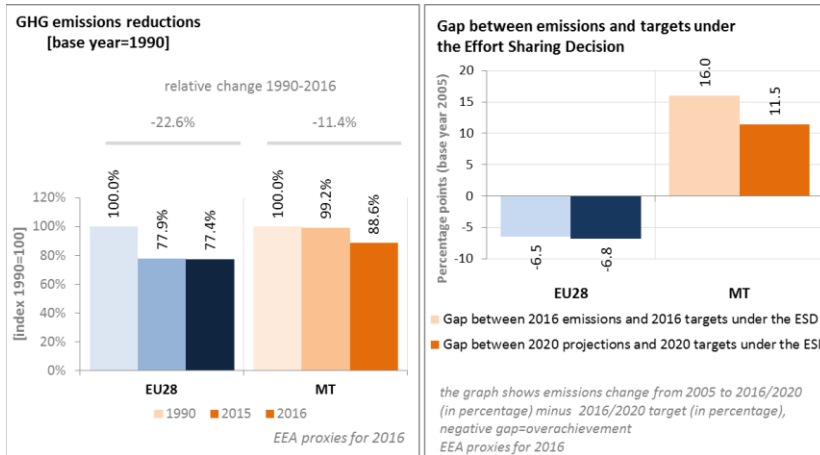
5. Decarbonisation of the economy

5.1. GHG emissions

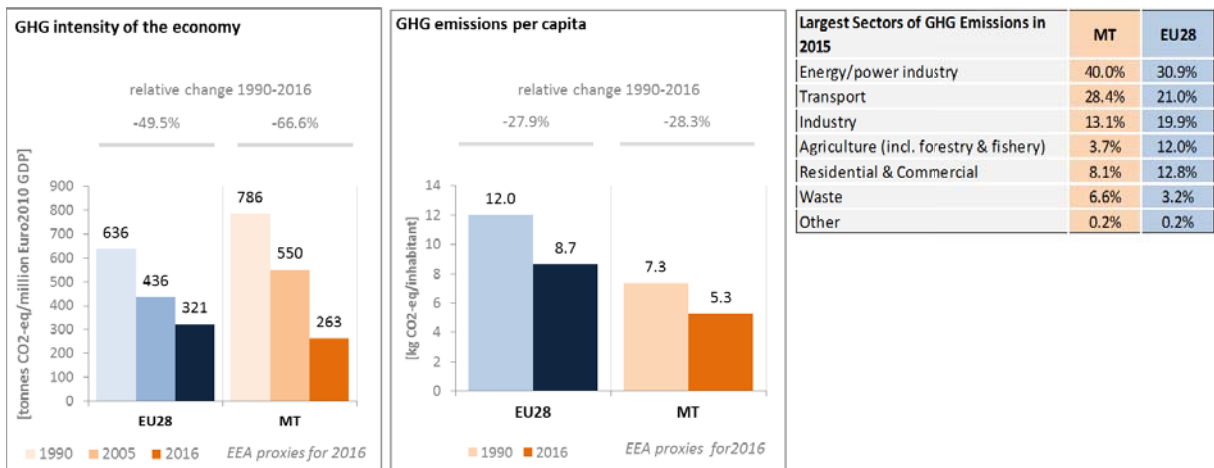
The main increases in emissions in Malta were evidenced in two particular fields – Hydrofluorocarbons (HFCs) and transport. Malta has the lowest emissions per capita in the EU.

Malta is the only Member State that required the use of flexibility mechanisms in order to meet its non-ETS GHG emission reduction targets for 2013 and 2014, and will still be required to continue using such flexibilities in order to meet its 2015 and 2016 targets (as 2016 proxy estimates show). Therefore, it is expected that Malta will make use of the flexibilities available to it, to be able to meet its targets set till 2030, if the basis of the ESR proposal remains the same beyond 2020.

According to the approximated data submitted to the Commission in 2017, it is expected that the 2016 target will be missed by a 16 pp. margin. Similarly Malta's projection for 2020 expects its target to be missed by an 11pps margin (based on WEM scenario, quality checked by the EEA and accounting for revised AEAs). This is mainly due to a continued increase of transport emissions and a strong increase of HFCs emissions over recent years; due to replacement of ozone depleting substances with F-gases in the use of refrigerators and air-conditioners. A smaller proportion of overall emissions (6.6%), Malta's share of emissions from waste were double that of the EU average in 2015.



(source: EC and EEA)



(source: EC and EEA based on UNFCCC)

Malta is currently developing a Low Carbon Development Strategy and after a public consultation closed in June 2017, is working on sector-specific strategies.

On accounted emissions from land use, land use change and forestry there are currently no available data for Malta.

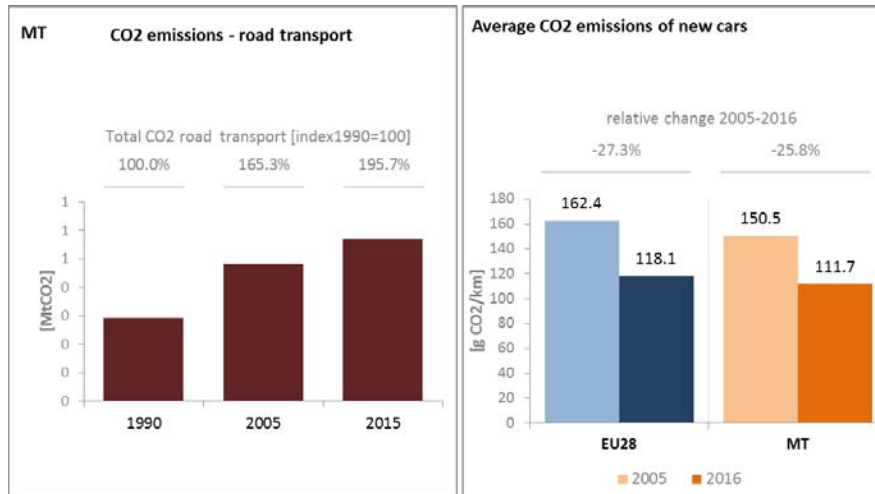
CO₂ emissions in transport and alternative fuelled vehicles

In Malta, the CO₂ emissions from road transport in 2015 were 95.7% above 1990 levels. Emissions of greenhouse gases from traffic continue growing and Malta is likely to fail to reach its 2020 emission targets if it does not resort to flexibilities provided.

Malta has adopted an ambitious National Transport Strategy with a 2050 horizon and an Operational Transport Master Plan to 2025. They include a diverse set of measures to rationalise the use of private cars, promote alternative mobility solutions and make more efficient use of multimodal and collective transport systems. While these measures are projected to make significant improvements, congestion is still projected to rise and greenhouse gas emissions from transport to decrease only

modestly until 2030⁷. However, further updating is needed on the quantification of emission reductions and targets stemming from the variety of policy measures adopted under the Transport Master Plan.

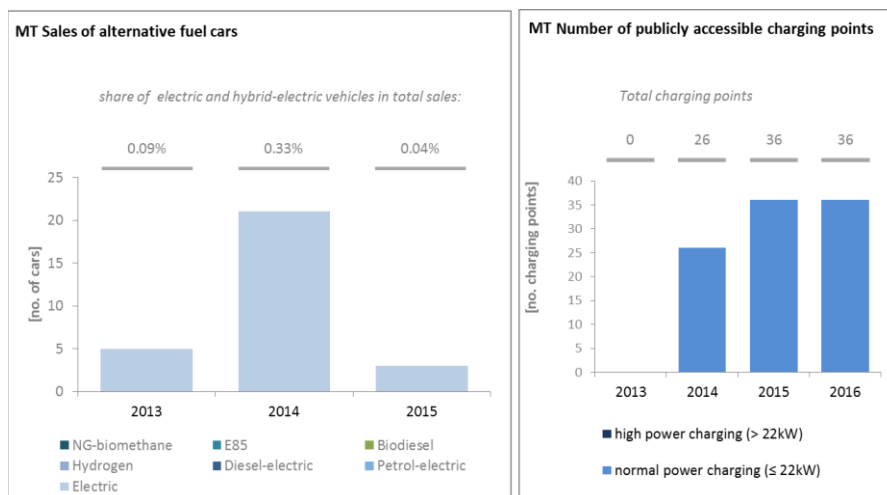
The reduction of the CO₂ emissions may be possible in the future also due to the low CO₂ emissions level of new cars sold on the Maltese market which is below the EU average.



(source: European Environment Agency)

The share of alternative fuel cars in total sales on the Maltese market is still marginal (i.e. below 0.04% in 2015), with a peak in 2014 when 0.33% of the cars sold in Malta were electric (i.e. 21 cars).

Market uptake of the electric car is also supported by a growing numbers of charging points. The number of electric charging points in Malta has from 2014 to 2016 increased from 26 to 36 units.



(European Environment Agency)

(European Alternative Fuels Observatory)

⁷ It should be noted that there are several other measures contained in the Transport Master plan which would also have a positive impact on GHG reduction. These measures could not be put into the Transport Model in order to quantify their individual and cumulative impacts because the respective policies or measures had not been developed to a sufficient level of detail to enable accurate modelling.

National Policy Frameworks under Directive 2014/94/EU on alternative fuels infrastructure have to establish targets, objective and measures for the development of the market of alternative fuels in the transport sector and the deployment of the relevant infrastructure.

To this date, no notification has been received from Malta and the Member State has failed to fulfil its obligations under Article 3(7) of Directive 2014/94/EU.

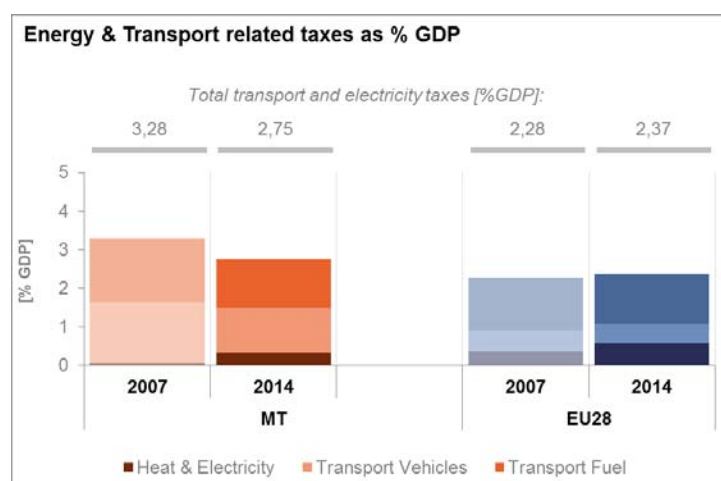
5.2. Adaptation to climate change

The current Maltese National Adaptation Strategy was adopted in 2012. The 2015 Climate Action Act formalises the requirement to maintain a strategy that is reviewed and updated at least every four years. Several sectorial action plans are available, covering the most vulnerable sectors, which are water resources, infrastructure and land use, natural ecosystems, agriculture and fisheries, health, civil protection immigration and vulnerable groups, and finally tourism. Monitoring of adaptation measures is done through the screening of Malta's National Environment Policy under the sections related to climate change, while monitoring on the strategy implementation is done by the sectorial focal persons on the Inter-Ministerial Committee on Climate Change.

5.3. Taxes on energy and transport⁸

Malta does not have a carbon tax in place, but both car registration tax rates and car ownership tax rates depend on CO₂ emission performance. This is significant since Malta has a relatively large and old car fleet.

Malta's overall tax burden on energy and transport in relation to GDP has fallen since 2007, but remains at 2.75 % in 2014, still nearly 0.4 p.p. higher than the EU average. Contrary to the trend for the EU as whole, the tax burden on transport, both as regards vehicles and transport fuels, has fallen significantly (by about 0.4 p.p. of GDP each over the period). Taxation of heat and electricity has remained below the EU-average, as the increase has been roughly in line with the increase of the EU-average.



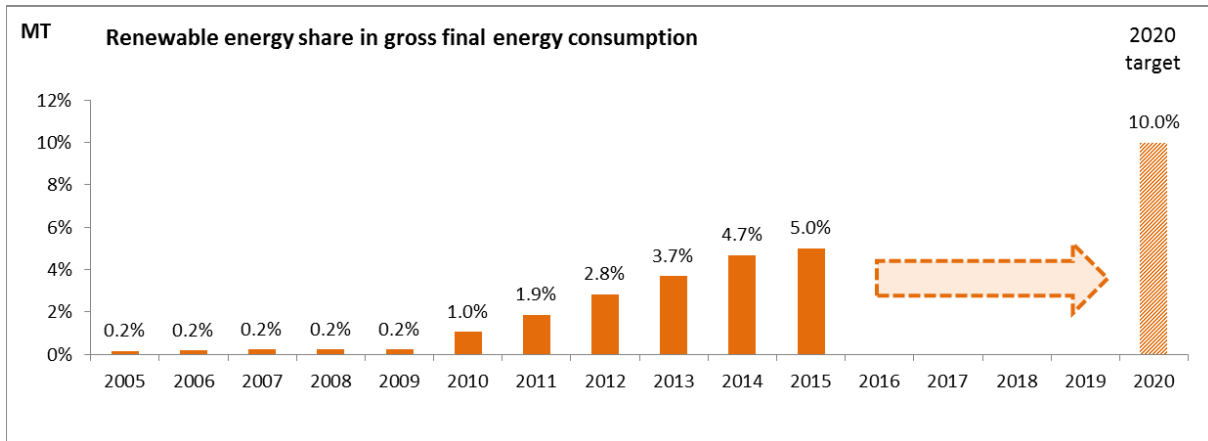
(source: Eurostat)

⁸ There is no data on fossil fuel subsidies for Malta.

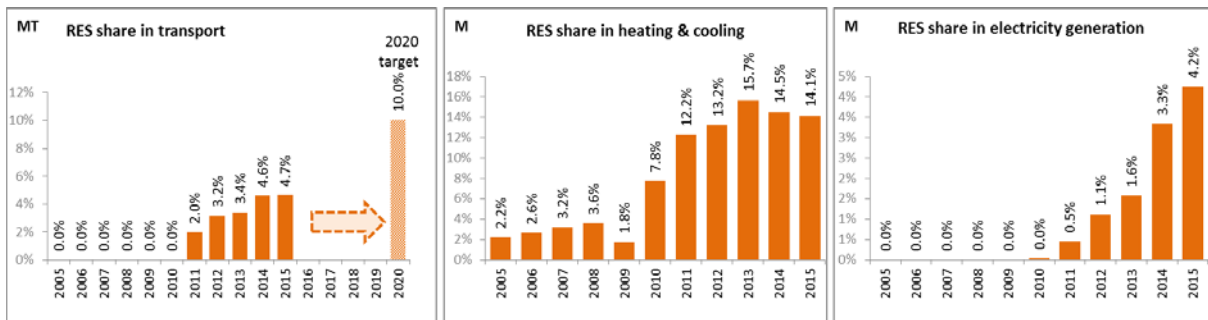
5.4. Renewable energy

For renewable energy in general, Malta is on track to reach its 10% renewable energy target for 2020. Malta met its 2013/2014 indicative trajectory on RES share in gross final energy consumption and is well above its 2015/2016 indicative trajectory towards the 2020 RES targets.

Whereas renewables in electricity generation have increased from nearly 0 to 4% in the period 2010-2015, the renewable energy share in heating and cooling has slightly decreased since 2013 due to an increase of energy consumption in the sector while consumption of renewable energy was stable.



(source: Eurostat-SHARES)

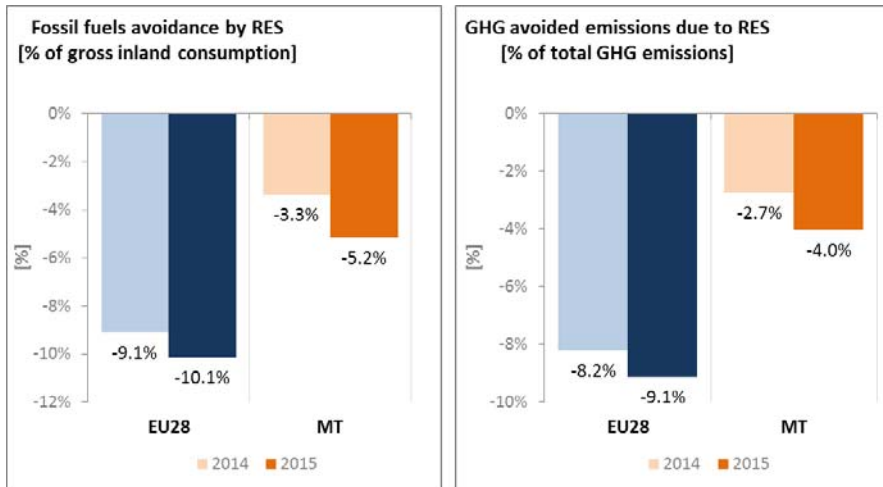


(source: Eurostat-SHARES)

In Malta, electricity from renewable energy sources is promoted through a combination of feed in tariffs and investment grants. Malta has a good climate for solar based renewables. However, most of Malta’s land is already developed or otherwise protected, leaving little land available to dedicate solely to solar installations, most of the renewable generation is therefore produced by decentralised rooftop photovoltaics. Solar water heating systems in private households are supported with grants. Deployment of such systems took place mainly between 2009 and 2011 but uptake has levelled off. The cost of solar based renewables support schemes is supported through the state budget (and ERDF in the case of capital grant schemes) rather than being passed directly onto final consumers.

Uptake of renewable energy sources in the transport sector is mainly driven by a substitution obligation on importers of fossil fuels, which mainly blend biofuels produced from waste and residues to meet their obligations. It is estimated that Malta avoided in 2015 only about 5.2% of the

fossil fuel in gross inland consumption and about 4.0% of GHG emissions at national level, compared to the EU average of respectively 10.1% and 9.1% reduction⁹.

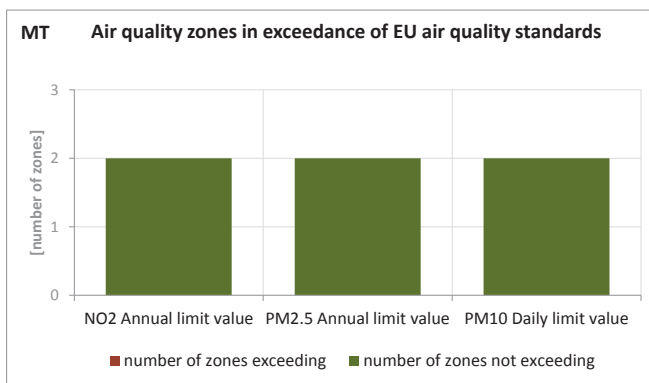


(source: EEA)

5.5. Contribution of the Energy Union to better air quality

In the last years, air quality in Malta is reported to be generally good, with exceptions. Nevertheless, for the year 2013, the European Environment Agency estimated that about 230 premature deaths were attributable to fine particulate matter (PM_{2.5}) concentrations¹⁰.

In 2015, Malta reported no exceedances of the binding EU air quality standards¹¹ (see figure below¹²).



(Source: EEA)

The health-related external costs from air pollution in Malta have been estimated to be more than EUR 182 million/year (income adjusted, 2010), which includes the intrinsic value of living a healthy

⁹ Avoided GHG emissions mentioned here have a theoretical character as these contributions do not necessarily represent 'net GHG savings per se' nor are they based on life-cycle assessment or full carbon accounting.

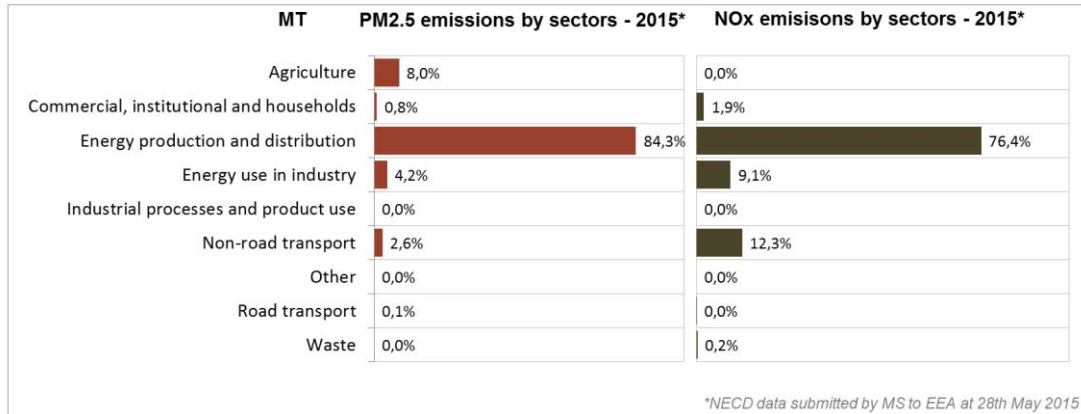
¹⁰ European Environment Agency, 2016, *Air Quality in Europe – 2016 Report*, table 10.2. The report also includes details as regards the underpinning methodology for calculating premature deaths.

¹¹ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe, OJ L 152, 11.6.2008, p.1-44

¹² Compliance data as reported by the Member States as part of their official annual air quality report for the calendar year 2015 (available on the European Environment Agency's (EEA) Eionet/Central Data Repository), <http://cdr.eionet.europa.eu/mt/eu/aqd>

life without premature death as well as the direct costs to the economy such as healthcare costs and lost working days due to sickness caused by air pollution¹³.

The Energy Union can substantially contribute to further improve air quality through measures reducing emissions of both GHG and air pollutants such as PM and nitrogen oxides (NO_x) from major contributing sectors such as (road) transport, energy production, industry and residential heating (e.g. stoves and boilers) as shown in the figure below¹⁴.



(Source: EEA. This table reflects only sources of primary PM_{2,5} emissions.)

6. Research, innovation and competitiveness

6.1. Research and innovation policy

Malta’s national research and innovation system has undergone a rapid process of change in recent years, with the goal of increasing intensity and capacity for R&I. The National Research and Innovation Strategy¹⁵ 2014–2020 is the principal document for the development and coordination of policies and initiatives to increase public R&I in sectors that can add value to the economy. The document is built on the Smart Specialisation Strategy in which several areas were identified through the Entrepreneurial Discovery Process (EDP). While “energy” does not feature as a stand-alone area, energy is featured in the smart specialisation area of “Resource-Efficient Buildings”.

Malta is not an active contributor to the ongoing work of the Strategic Energy Technology (SET) Plan. It does not participate in any of the fourteen temporary working groups which have been set up to implement the integrated SET Plan.

Regarding the Horizon 2020 programme, Malta has received so far EUR 0.7 million of the EU contribution devoted to the 'secure, clean and efficient energy' part of the programme through 10 participations of Maltese organisations in Horizon 2020 projects.

¹³ See also the EU Environmental Implementation Review Country Report for Malta, SWD(2017)51 final of 3.2.2017

¹⁴ National emission data as reported by the Member States to the EEA (available on the EEA's Eionet/Central Data Repository), http://cdr.eionet.europa.eu/mt/eu/nec_revised

¹⁵ <http://mcast.gov.mt/policy-strategy/national-research-innovation-policy/>

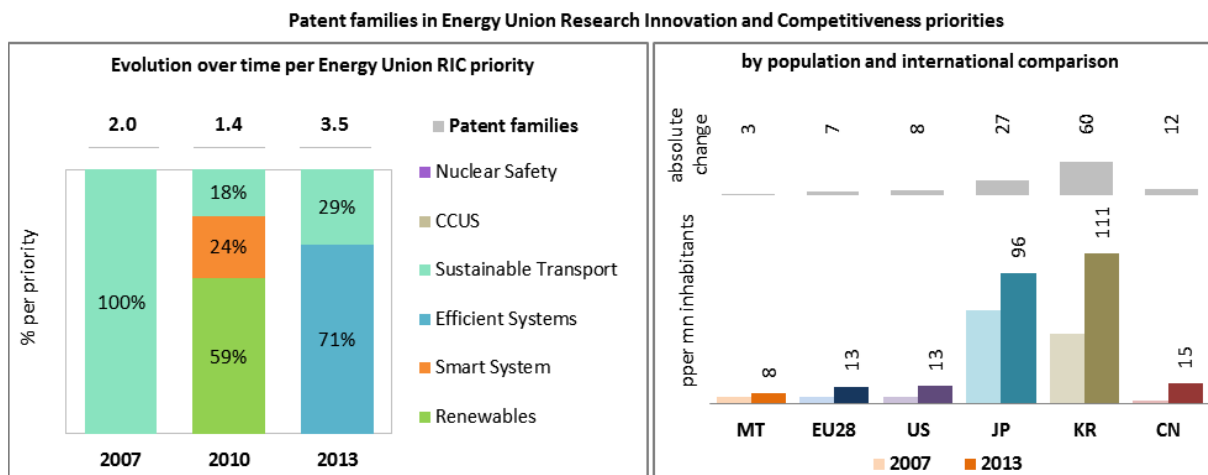
6.2. Investments and patents in the Energy Union R&I priorities

With respect to public (national) funding, between 2015 and 2017¹⁶ the Malta Council for Science and Technology disbursed approximately EUR 0.94 million in projects related to energy and low-carbon technologies through its FUSION¹⁷ programme.

Private investment in the Energy Union R&I priorities in 2013 was estimated at EUR 10 million (0.06 % of the private R&I investment in Energy Union R&I priorities in the EU). This investment was dedicated to the Efficient Systems (73%) and Sustainable Transport (27%) priorities of the Energy Union.

In 2013, the most recent year for which complete patent¹⁸ statistics are available, 3 companies and research organisations based in Malta co-filed 3.5¹⁹ patents in low-carbon energy technologies (0.05% of the EU total) in the Efficient Systems (71%) and Sustainable Transport (29%) priorities.

In 2013, private investments in Energy Union R&I priorities, when normalised by GDP, were higher than the EU average. In contrast, the number of patents normalised by population was lower than the respective EU indicator. In the period 2007-2013, private investment in Energy Union R&I priorities decreased by 3% per year on average, while at EU level it increased by 6%. For the same period, the number of patents in the Energy Union R&I priorities increased by 10% per year on average, a lower rate of increase compared to the EU indicator (15%).



(Data sources: Patent data based on the European Patent Office PATSTAT database²⁰. Private investment as estimated by JRC SETIS. Detailed methodology available from the JRC²¹.)

¹⁶ includes data up to August 2017

¹⁷ <http://mcst.gov.mt/ri-programmes/fusion/>

¹⁸ In the context of this document, the term 'patent' refers to patent families, rather than applications, as a measure of innovative activity. Patent families include all documents relevant to a distinct invention (e.g. applications to multiple authorities), thus preventing multiple counting. A fraction of the family is allocated to each applicant and relevant technology.

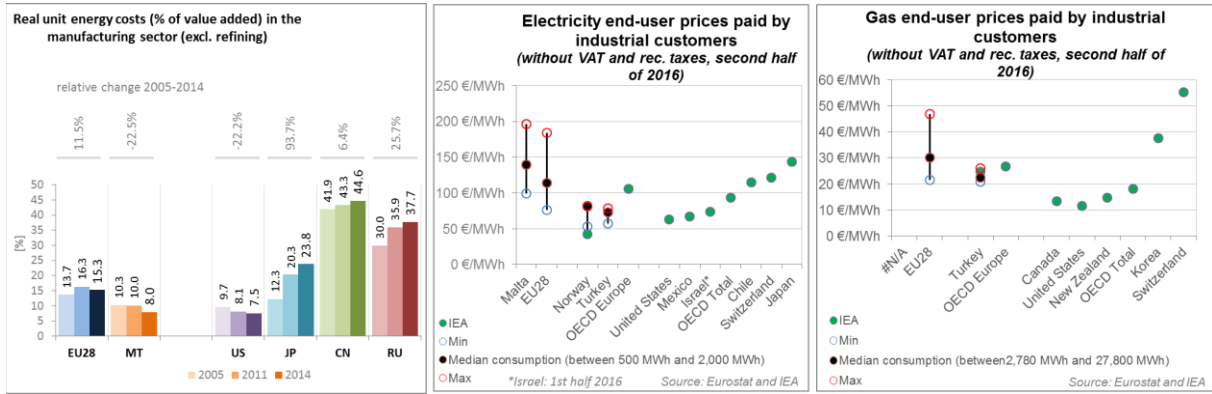
¹⁹ According to the JRC methodology, a single patent family can be split across a number of applicants and priorities

²⁰ <https://www.epo.org/searching-for-patents/business/patstat.html#tab1>

²¹ <https://setis.ec.europa.eu/related-jrc-activities/jrc-setis-reports/monitoring-ri-low-carbon-energy-technologies>

6.3. Competitiveness

In 2014, the real unit energy costs (RUEC)²² in Malta (8.0) were far below the EU average (15.3), and most major global economies, with the exception of the US (7.5). This can be partly explained by the sectorial specialisation, with little energy intensive industry. The electricity prices paid by industrial customers in Malta are above the EU average but have been decreasing since 2010.



(source: ECFIN)

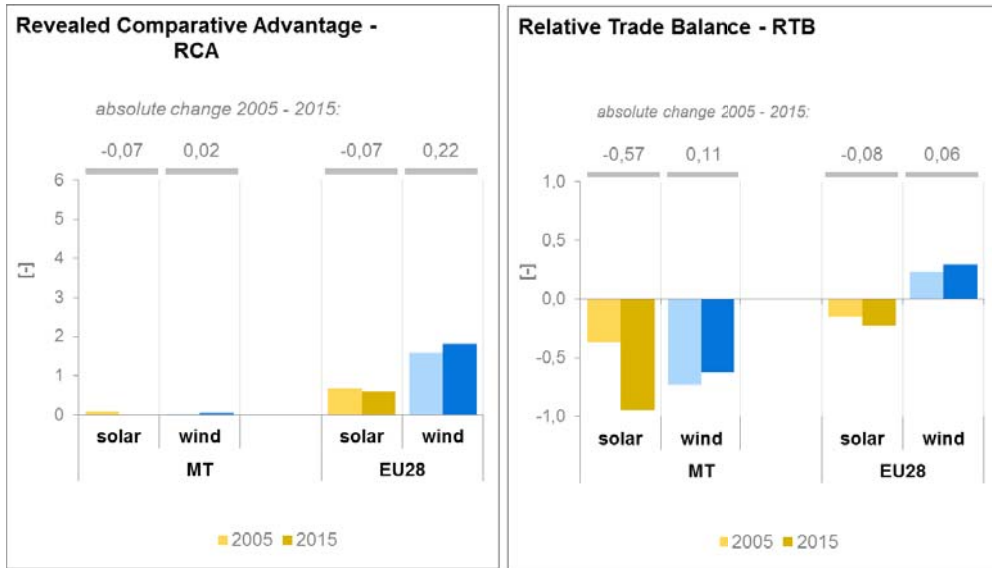
(source: Eurostat and IEA)

Malta appears to have a weak competitiveness performance in wind and solar energy technology, in both absolute terms and vis-à-vis the EU as a whole. As indicated by the revealed comparative advantage indicator²³ being close to zero and thus far under the level for the EU, the Maltese economy is specialised neither in solar PV nor in wind energy technologies. The gap with the EU has become significantly larger over the period 2005 – 2015 as regards wind energy technology. While the conditions are more favourable for photovoltaic, Malta does not have a large manufacturing sector and hence is not well placed to produce solar components. The relative trade balance²⁴ confirms that Malta is a net importer of both solar PV and wind energy technologies and components, hence it is more dependent on foreign supply than the EU average.

²² This indicator measures the amount of money spent on energy sources needed to obtain one unit of value added.

²³The RCA index for product "i" is defined as follows: $RCA_i = \frac{\frac{X_{j,i}}{\sum_i X_{j,i}}}{\frac{X_{w,i}}{\sum_i X_{w,i}}}$ where X is the value of exports, and j is the country and w is the reference group, the World economy. 2005 refers in the text to the indicator average over the 2000-2009 period, while 2015 represents the average over the 2010-2016 period. The same applies for the RTB indicator - see below.

²⁴The RTB indicator for product "i" is defined as follows: $RTB_i = \frac{X_i - M_i}{X_i + M_i}$ where X_i is the value of product's "i" exports and M_i imports.



(source: UN comtrade)

7. Regional and local cooperation

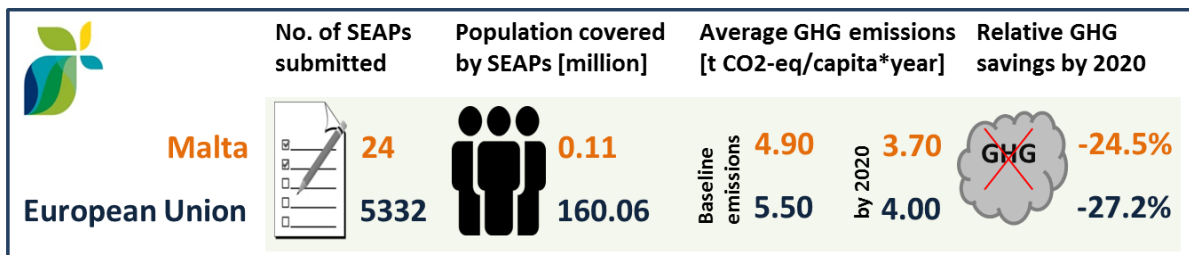
Malta is a member of two regional Groups established under the TEN-E Regulation: North-South electricity and gas interconnections in Western Europe. Regional cooperation on infrastructure development is necessary to optimise the identification of regional infrastructure priorities and to coordinate cross-border investments. For an island Member State as Malta, the access to the EU wide energy market provides security of supply, increases competitiveness and can reduce emissions.

This cooperation led to the first connection of the Maltese electricity grid in 2015 and facilitated the abandonment of heavy fuel oil for electricity generation in 2017, following commissioning of the gas plant and LNG facilities.

European Territorial Cooperation –'Interreg' – under EU cohesion policy provides further opportunities for cross-border, transnational and interregional cooperation, including in the Energy Union areas.

Cities and urban areas have a key role in the energy and climate challenge. The Urban Agenda for the EU, established by the Pact of Amsterdam in May 2016, better involves cities in the design and implementation of policies, including those related to the Energy Union. It is implemented through Partnerships, in which the Commission, Member States, cities and stakeholders work together on a number of important areas, including on Energy Transition, Urban Mobility, Air Quality, Climate Adaptation and Housing.

By 2016, in the context on the Covenant of Mayors, the sustainable energy action plans delivered by 24 Maltese municipalities had been assessed. These municipalities represent 28 % of the total population in Malta. All together, these municipalities committed to reduce by 2020 the GHG emissions by 24.5% (as compared to 1990 baseline).



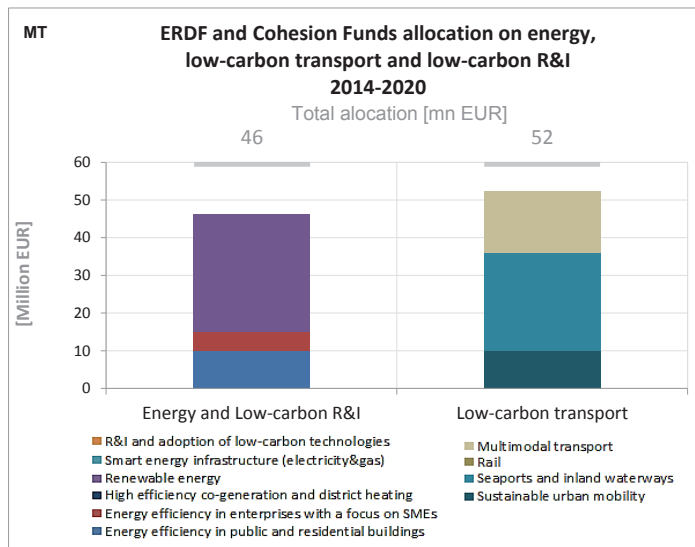
(source: JRC 2016. Notes: SEAP=sustainable energy action plan, GHG=greenhouse gas emissions)

In Malta, by September 2016, no cities have yet committed to conduct vulnerability and risk assessment and develop and implement adaptation plans in the framework of the Covenant of Mayors for Climate and Energy.

8. Cohesion policy and EU clean energy investments

EU cohesion policy makes a key contribution to delivering the Energy Union objectives on the ground, including important investment possibilities to implement energy policy objectives in Malta which are complemented by national public and private co-financing, aiming at optimal leverage. It also ensures integrated territorial solutions to energy and climate challenges, supports capacity building and provides technical assistance.

Over 2014-2020, cohesion policy is investing some EUR 46 million in energy efficiency and renewable energy improvements in public and residential buildings and enterprises Malta. Cohesion policy is also investing significantly in R&I and in SME competitiveness in Malta, based on the national strategy for smart specialisation. For Malta, the strategy includes different areas of specialisation, plus ICT as a horizontal enabler. One of these areas targets resource efficient buildings, aiming to develop solutions for improved resource efficiency in new and existing buildings through, inter alia, demonstration projects and optimisation of building design. At this stage, the allocations foreseen for investments in R&I and adoption of low-carbon technologies in Malta are not specified, but should become available in line with the evolving content of the smart specialisation strategy. A further estimated EUR 52 million is invested in supporting the move towards an energy-efficient, decarbonised transport sector.



(source: DG REGIO)

These investments are expected to contribute to a decrease of around 170,000 kWh per year of primary energy consumption of public buildings, and around 80 MW of additional capacity of renewable energy production. Overall, the EU cohesion policy investments in Malta over 2014-2020 are expected to contribute to an estimated annual decrease of GHG emissions of around 68,000 tonnes of CO2 equivalent.

For example, the project Promotion of Renewable Energy Sources in the Domestic Sector (2016-2018) promotes the introduction and use of renewable energy sources (RES) through support mechanisms. The project provides financial support to cover part of the costs of the procurement and installation of PV systems installed for domestic use. The scheme is open to all energy consumers

in the domestic sectors and will seek to promote the production and distribution of energy derived from renewable sources, will increase demand and attract more consumers to make use of RES and will reduce dependency on traditional energy sources and reducing harmful emissions.

Through its support to sustainable transport systems, the Connecting Europe Facility (CEF) also contributes to the goals of the Energy Union. Following Maltese participation in the CEF – Transport 2014-2015 Calls, the Maltese action portfolio comprises 2 signed grant agreements, allocating EUR 39 million of actual CEF Transport Funding to Maltese beneficiaries (state-of-play February 2017)²⁵. The transport mode which receives the highest share of funding is road (99.5% of actual funding). The main CEF action in Malta is the upgrading of the modal interconnection on Malta's TEN-T road core network. The action's objective is to eliminate bottlenecks through the construction of an overpass link. The action will also introduce modal shift initiatives: park & ride, bus lanes, cycle lanes and footpaths. The removal of this major traffic bottleneck will improve connectivity, accessibility, safety, sustainability and reduce significant negative environmental, social and economic impacts resulting from transport externalities.²⁶

²⁵Note that European Economic Interest Groups and International Organisations are excluded from the analysis.

²⁶Source: INEA