



Environmental Report

For the SEA of the ERDF, CF Programmes and the
JTF Plan 2021-2027


Report



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DISCLAIMER

This report has been prepared by AIS Environment with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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1 INTRODUCTION

The Strategy & Implementation Division (SID) within the Ministry for the Economy, European Funds and Lands has commissioned AIS Environment Ltd. through the public procurement system (CT3000/2020/2) to carry out a Strategic Environmental Assessment (SEA) of the ERDF, CF Operational Programmes and the JTF Plan 2021-2027.

The SEA will be carried out in accordance with local legislation S.L.549.61 (Environment Protection Act), and involves the following tasks as outlined in the TORs:

- Task 1: Kick-off meeting
- Task 2: Inception report
- Task 3: Screening and scoping report
- Task 4: Draft environmental report
- Task 5: Public and stakeholder consultations
- Task 6: Final environmental report
- Task 7: Draft adoption and monitoring report
- Task 8: Final adoption and monitoring report

This report achieves the requirements of Task 4.

1.1 ENVIRONMENTAL REPORT OBJECTIVES

This environmental report aims to assess the strategic environmental impacts arising from the proposed ERDF, CF Programmes and JFT plan 2021-2027. It also summarises the findings of the SEA, which AIS will publish as part of the public consultation.

The report portrays the overall vision of the ERDF, CF Programmes and JTF plan, including details on the measures proposed as part of the programmes and plan. The report then provides details of the methodology used in the SEA process, followed by the results of the baseline studies and the impact assessment.

1.2 REPORT STRUCTURE

The report is structured in accordance with the guidelines set out in Schedule I of the STRATEGIC ENVIRONMENTAL ASSESSMENT REGULATIONS (S.L.549.61).

S.L. 549.61 REQUIREMENT		SECTION
a	An outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes	2
b	The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme	5

S.L. 549.61 REQUIREMENT		SECTION
c	The environmental characteristics of areas likely to be significantly affected	5
d	Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC	5
e	The environmental protection objectives, established at international, European or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation	4.4
f	The likely significant effects on the environment, including on issues such and biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors. These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects	7.2
g	The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme	8
h	An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties, such as technical deficiencies or lack of know-how, encountered in compiling the required information	6
i	A description of the measures envisaged concerning monitoring in accordance with regulation 11	9
j	A non-technical summary of the information provided under the above	10

2 OVERVIEW OF THE SECTOR PROGRAMME

2.1 OVERVIEW OF THE PROGRAMME

The SEA covers three (3) funds namely the ERDF, CF and JTF. The European Regional Development Fund (ERDF) fund aims to reduce economic, environmental and social disparities and foster a green and sustainable socio-economic growth. The Cohesion Fund (CF) provides support for those Member States, such as Malta, that have a gross national income per capita which is lower than 90% of the EU-27 average with a focus on environment and trans-European networks. The Just Transition Fund (JTF) is one of the three pillars of the Just Transition Mechanism, which aims to ensure a swift transition towards a climate-neutral economy.

The Programme identifies seven (7) thematic priorities, upon which resources shall be focused, to address Malta's challenges and support its opportunities. These priorities have a total budget (EU + MT share) of some EUR 1,018 million and are:

- Priority 1 ERDF: A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity;
- Priority 2 ERDF: Promoting clean and fair energy transition, sustainable wastewater management and green investment;
- Priority 4 ERDF: A more social and inclusive Europe implementing the European Pillar of Social Rights;
- Priority 5 ERDF: A Europe closer to citizens by fostering the sustainable and integrated development of all type of territories and local initiatives;
- Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility;
- Priority 3 CF: A more connected Europe by enhancing mobility;
- Priority 6: Just Transition;
- Priority 7: Technical Assistance

The priorities aim to achieve the environment and socio-economic development over the programme cycle, and shall contribute to low carbon, sustainable transport, inclusive education and training, foster economic recovery, and invest in green and digital transition. Moreover, investments will aim to achieve economic sustainability and recovery, fiscal policies, and the resilience of health systems.

This programme also includes the Just Transition Fund Plan. The Plan outlines the decarbonisation approach to support the transition process towards a climate-neutral economy. The plan will include the decarbonisation of international ports and road transport through alternative fuel infrastructure. The decarbonisation of ports shall be directed towards investment in mainland Malta, mainly since it provides the link to mainland Europe through its international two Core Ten-T Ports. Furthermore, the deployment of alternative fuel infrastructure will also facilitate the transition towards cleaner land transport to promote the reduction of public and private vehicles reliant on conventional fuel.

2.2 PROPOSED MEASURES

A single programme outlines the areas of support under ERDF, CF and the JTF, which aims to foster socio-economic development across various sectors.

In 2019, the Ministry launched a consultation process on Malta's challenges and investment needs that may be supported through the new wave of EU funds for the 2021-2027 period. Consultations were held in line with partnership principle in accordance with multi-level governance and a bottom-up approach. Furthermore, in 2020-2021, bilateral meeting with various stakeholder were also held with a particular focus on the ERDF/CF/JTF programmes. The outcomes of such consultation sessions and discussions provided important insights on the needs and investment priorities for Malta's socio-economic development and served as a basis for the drafting of the EU funds and programmes.

For further information on the measures proposed as part of the public consultation document for the ERDF/CF/JTF, kindly visit the Ministry's website.¹

¹EU Funds for Malta 2021-2027, Public Consultation Document, Cohesion Fund, Just Transition Fund, European Regional Development Fund.
<https://eufunds.gov.mt/en/EU%20Funds%20Programmes/EU%20Territorial%20Programmes/Documents/CF-JTF-ERDF%20Consultation%20Document%20-%20WEB.pdf>

3 METHODOLOGY

3.1 RESULTS FROM THE SCREENING REPORT

The Consultants completed the screening template provided by the SEA Focal Point with details on the ERDF, CF Operational Programmes and the JTF Plan 2021- 2027. These templates outlined a range of information about the Programme including a general description, relevance of SEA regulations and potential environmental effects.

The final stage of the screening exercise involved the identification of key stakeholders relevant to the SEA exercise, as per Table 1, which also includes the respective designated authorities as required by S.L. 549.61 article 7 (3).

TABLE 1: LIST OF STAKEHOLDERS TARGETED DURING THE PROJECT

GROUP	STAKEHOLDER
Governmental bodies	The Environment & Resources Authority
	Transport Malta
	Planning Authority
	Ministry for the Environment, Energy and Enterprise
	Ministry for Finance and Employment
	Department of Fisheries and Aquaculture
	Ministry for Transport, Infrastructure and Capital Projects
	Ministry for Gozo
	Ministry for Agriculture, Fisheries, Food and Animal Rights
	University of Malta
	Malta Aquaculture Directorate
	Energy and Water Agency
	Ambjent Malta Agency
	Ministry for Health
	Regulator for Energy and Water Services
	Environmental Health Directorate
	Civil Protection Department
Occupational Health & Safety Authority	
Local Councils' Association	
Malta Resources Authority	
NGOs	Ghaqda Koperattiva tas-Sajd (GhKS)
	Koperattiva tas-Sajd Malta (KSM)

GROUP	STAKEHOLDER
	Flimkien Ghal Ambjent Ahjar
	Friends of the Earth Malta
	Biological Conservation Research Foundation
	Fondazzjoni Wirt Artna
	Nature Trust
	Moviment Graffiti
	Birdlife Malta
	Din l-Art Helwa

As required by Article 5 (2) and Article 6(2) of S.L. 549.61, the Screening and Scoping Report underwent a stakeholder consultation period. The consultation period allowed the interested parties to provide feedback on the results of the Screening and Scoping exercises. This first consultation period allowed the Consultants to properly integrate all environmental considerations and viewpoints in the early stages of the SEA.

3.2 RESULTS FROM THE SCOPING REPORT

Stage 1 involved reviewing the list of proposed measures which have been included in the ERDF/CF/JTF programme/plan. Following the review, a list of key environmental themes was drawn up, as follows:

- Air quality
- Biodiversity (terrestrial and marine)
- Land uses & landscape
- Cultural heritage
- Energy & water consumption
- Climate change
- Transportation & related infrastructure
- Waste management

The Scoping Report also identifies the list of key environmental themes, in line with the guidelines provided in Schedule I of the SEA Regulations S.L. 549.61.

The SEA Directive does not specifically require the use of objectives or indicators in SEA, yet they provide a suitable methodology to describe, analyse and compare environmental effects. SEA objectives provide the environmental goals, while the indicators measure the plan's performance against the objectives. The SEA objectives are different and separate from the policy objectives, although the two influence each other and may overlap. SEA indicators are measurements of temporal trends, which help to determine the success of the implementation of the policy against various SEA objectives.

Table 2 provides the environmental issues, criteria and indicators associated with each theme. The impact assessment also took into consideration the inter-relationships between the themes, as well as secondary, cumulative, synergistic, short, medium and long-term, permanent and temporary, positive and negative impacts of the policy.

The SEA also assessed the relevant policies. Such policies included EU policies, regulations, communications, directives and international obligations and agreements as well as the relevant national legislation that they transpose or that Malta is party to.

TABLE 2: ENVIRONMENTAL THEMES, CRITERIA AND INDICATORS RELATED TO THE ERDF, CF AND JTF

THEME	SEA OBJECTIVE	CRITERION	INDICATOR	DATA SOURCE
Air quality	1 Improve air quality	Ensure that the national air quality issues and emission limit values are not breached	National emissions (tonnage) of pollutants into the air, with regards to Malta's obligations under the NEC Directive 2016/2284	NSO
				ERA
Biodiversity	2 Maintain and safeguard protected habitats and species	Maintain and safeguard the conservation of designated habitats and species of flora and fauna	Status of protected habitats and species of flora and fauna	ERA
		Maintain and safeguard other important habitats which are not officially protected yet	Status of other habitats, including valleys and watercourses	ERA
		Maintain and safeguard environmental factors essential to ecosystems	Status of environmental factors, including coastal water, groundwater, geology and soil	ERA
Land uses & landscape	3 Protect the quality, integrity and distinctiveness of the landscape and townscapes	Protection of the landscape	Status of landform and topography, landscape, the natural beauty and scenic amenity of the landscape	ERA
Cultural heritage	4 Conserve and protect sites of architectural,	Conserve and protect sites of cultural heritage	Number of scheduled sites	PA

THEME	SEA OBJECTIVE	CRITERION	INDICATOR	DATA SOURCE
	archaeological and/or ecological importance from adverse impacts of infrastructural works			
Energy & water	5 Reduce Malta's dependence on non-renewable sources of energy	Decrease Malta's dependence on non-renewable energy sources	Energy generation by type	Eurostat/ EWA/ NSO
			Number of solar panel installations	
	Reduce energy consumption levels	To incentivise the reduction of energy consumption by end-users	Energy consumption levels by type	
	Reduce water consumption levels			
	Improve water quality	To improve the quality of primary water		
	Increase Malta's security of supply	Increase Malta's security of supply	Security of supply	
Climate change	6 Reduce Malta's vulnerability to climate change	Conserve energy and promote renewable sources	Annual mean air temperature	ERA/ Malta Airport MetOffice/ NSO
			Annual total precipitation	
			Concentrations of greenhouse gases	
Transportation and infrastructure	7 Minimise environmental impacts from non-sustainable means of	Reduce the number of vehicles running on non-renewable fuel sources	Number of vehicles by type	EWA/ NSO/ TM
			Number of bicycles and e-bicycles	

THEME	SEA OBJECTIVE	CRITERION	INDICATOR	DATA SOURCE
	transportation and improve Malta's status	To increase public transport usage	Number of public transport commuters	
	Provide and increase use of alternative means of travel	To promote cycling as a sustainable mode of transport	Length of cycle lanes	
		To improve accessibility and better access without the use of cars	Number of public transport commuters	
Waste management	8 Increase sustainable management of waste, waste preventions and minimisation practices	Promote prevention, re-use, recycling, recovery (energy)	Waste generation by type	MEEE/ Wasteserv
	Increase re-use, recycling and recovery wastes	Reduce landfilling	Waste separation and recycling	

3.3 DESCRIPTION OF ENVIRONMENTAL BASELINES

Stages 2 and 3 of the SEA involved a thorough literature review of any existing and available information relevant to the measures. Relevant literature included but was not limited to the following data sources:

- THE STRATEGIC PLAN FOR THE ENVIRONMENT AND DEVELOPMENT (SPED, 2015)
- STATE OF THE ENVIRONMENT REPORT (2018)
- THE NATIONAL ENVIRONMENTAL POLICY (2012)
- THE NATIONAL STRATEGY FOR THE ENVIRONMENT (2020-2050)
- THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (2012-2020)
- FLORA, FAUNA AND NATURAL HABITATS PROTECTION REGULATIONS (S.L. 549.44)
- LONG-TERM WASTE MANAGEMENT PLAN (2021-2030)
- 2ND WATER CATCHMENT MANAGEMENT PLAN FOR THE MALTA WATER CATCHMENT DISTRICT (2016)
- BATHING WATER QUALITY REGULATIONS (S.L. 465.09)
- AIR QUALITY PLAN FOR THE MALTESE ISLANDS (2010)
- NOISE ACTION PLAN (2013)
- THE LIMITATION OF EMISSIONS OF CERTAIN ATMOSPHERIC POLLUTANTS REGULATIONS (S.L. 549.124), in view of the specific emission ceilings for Malta
- Any other relevant literature sources, such as those from the NSO, ERA, Eurostat, MetOffice, Malta Airport, MEEE and Wasteserv

The Consultants carried out a thorough assessment of the proposed Programme. The SEA also compared each of the measures to the do-nothing scenario (zero option) and a do-minimum scenario as required by S.L.549.61 article 6 (1).

3.4 IMPACT AND IDENTIFICATION EVALUATION

Stage 4 involved the assessment of the significance of the environmental impacts, in line with the guidelines provided in Section 2 of Schedule II Criteria for determining the likely significance of effects referred to in Regulation 4(5) of S.L.549.61 on the Strategic Environmental Assessment:

- (a) the probability, duration, frequency and reversibility of the effects,*
- (b) the cumulative nature of the effects,*
- (c) the transboundary nature of the effects,*
- (d) the risks to human health or the environment (e.g. due to accidents),*
- (e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected),*
- (f) the value and vulnerability of the area likely to be affected due to:*
 - i. special natural characteristics or cultural heritage,*
 - ii. exceeded environmental quality standards or limit values,*
 - iii. intensive land-use,*
- (g) the effects on areas or landscapes which have a recognised national, Community or international protection status.*

The SEA assesses the impacts on the environmental themes highlighted in Table 2, as presented in Environmental Report. For each environmental theme, the report presents the assessment results in tabular format, including the comparison to the alternative scenarios (Stage 5). The matrix summarises the impacts of the alternatives, the significance of the impacts and the timeframe of the impacts. On the basis of the results from Stages 4 and 5, we have put forward recommendations to be considered in the updated ERDF/CF/JTF Programme (Stage 6), as well as proposals for a monitoring programme of the ERDF/CF/JTF Programme (Stage 7).

3.5 CONSULTATIONS

As required by Article 5 (2) and Article 6(2) of S.L. 549.61, the Screening and Scoping Report underwent a stakeholder consultation period that involved the respective designated authorities as required by S.L. 549.61 article 7 (3) including the Environment and Resources Authority, the Regulator for Energy and Water Services, the Ministry for Agriculture, Fisheries, and Animal Rights, Ministry for Health, the Ministry for Health and the Environmental Health Directorate. The consultation period allowed the interested parties to provide feedback on the results of the Screening and Scoping exercises. This first consultation period allowed the Consultants to properly integrate all environmental considerations and viewpoints in the early stages of the SEA. During the consultation period, two stakeholders came forward with comments on the Screening & Scoping Report.²

In line with the requirements of S.L. 549.61 article 7 (3), the Environmental Report will be published and shall be subject to public and stakeholder consultations. The entities in Table 1 will be targeted as part of the stakeholder consultation session.

As was carried out during the first consultation sessions, the Environmental Report has been sent directly via email to the stakeholders and made public. Stakeholders and the public were invited to a stakeholder consultation session, during which AIS presented the findings of the Environmental Report. Comments received via email or during the consultation session (Annex 1) were integrated into the final version of the Environmental Report.

² The Environment and Resources Authority and BirdLife Malta were the two stakeholders that provided comments during the first consultation period.

4 RELEVANT ENVIRONMENTAL POLICIES

4.1 TRANSPORT POLICIES

4.1.1 EU Regulation 1315/2013 Guidelines for the Development of the Trans-European Transport Network (2013)

The trans-European transport network aims to “strengthen the social, economic and territorial cohesion of the Union and contribute to the creation of a single European transport area which is efficient and sustainable, increases the benefits for its users and supports inclusive growth”. The guidelines outline the dual layer infrastructure that is needed to create a successful trans-European transport Network. This dual layer system needs to be composed of a core network and a comprehensive network.

The guidelines describe a wide variety of measures required to achieve the TEN-T Network objectives; including:

- Promotion and development of sustainable urban mobility
- Improvement in transport efficiency to reduce the carbon footprint
- Promotion and use of alternative clean fuels
- Removal of bottle necks
- Promotion and encouragement of low carbon clean transport modes
- Improving the quality of infrastructure (roads, ports and airports)
- Modernising ports
- Inclusion of electricity supply systems throughout the transport network.

4.1.2 The National Transport Strategy 2050 (NTS)

The National Transport Strategy (NTS) provides a long-term vision for the development of transport across the Maltese Islands. The NTS aims to “*provide a sustainable transport system which is efficient, inclusive, safe, integrated and reliable for people and freight, and which supports attractive urban, rural and coastal environments and communities where people want to live and work: now and in the future*”.

The design of such a strategy was necessary to fulfil the requirements of Chapter 499 of the laws of Malta (Authority for Transport in Malta Act [Act XV of 2009]). The Strategy provides a strong base for the guidance of the development on the Transport Master Plans (Transport Master Plan 2025 and Transport Master Plan 2035).

The NTS sets out eight guiding principles and six strategic goals.

Guiding principles

1. Efficient utilisation of the existing transport system – traffic management, logistics planning and enforcement
2. Creating a modal shift
3. Integrated approach to planning and design
4. Encouraging use of greener fuels and vehicles

5. Modernisation, development and revitalisation of the strategic transport network to improve territorial cohesion
6. Investment in education, information and human resources
7. Making room for innovation and research
8. Sustainable financing and fair competition

Strategic goals

1. Support economic development
2. Promote environmental and urban stability
3. Support social development and inclusion
4. Provide access and mobility
5. Provide safe and secure transport
6. Work towards improved public health

4.1.3 The National Transport Master Plan 2025 (2016)

The NATIONAL TRANSPORT MASTER PLAN 2025 breaks up the long-term visions and goals of the Strategy into shorter term goals, as well as providing a timeline for the goal implementation.

The Plan highlights the importance of completing the TEN-T road, air and maritime network within the Maltese Islands to fulfil the objectives set out in the EU Regulation 1315/2013. In order to achieve the EU objectives, the Plan stipulates a comprehensive list of objectives for road transportation, public transport services, intermodal operations, internal and external maritime operations and the aviation sector. Collectively the individual objectives aim to help to protect the transportation industry against climate change, promote research and innovation in the transport sector and reduce the number of accidents.

4.2 SOCIAL, ECONOMIC AND CULTURAL POLICIES

4.2.1 Smart Specialisation Strategy Malta 2021 - 2027

In early 2022, Malta adopted the SMART SPECIALIZATION STRATEGY for the period leading to 2027 and aims to build upon the existing national Research and Innovation framework. The Strategy enables EU Member States to access structural funding under the ERDF in the field of Research, Technology, Development and Innovation. Following public consultation in late 2020, the Strategy outlined six priority areas for the period between 2021 and 2027:

- Health and Well-being
- Sustainable Use of Resources for Climate Change Mitigation and Adaptation
- Smart Manufacturing
- Marine & Maritime Technology
- Aviation and Aerospace
- Future Digital Technologies

4.2.2 Malta Tourism Strategy 2021 – 2030

The Malta Tourism Strategy for 2021-2030 is a follow-up of the National Tourism Policy to 2020. The Strategy addresses the influence of the COVID-19 pandemic on the Maltese tourism sector, the resulting consequences and the necessary action to rebuild the tourism sector post-COVID-19. In addition, the Strategy aims to strengthen the tourism industry, rendering it more sustainable and competitive by 2030.

4.2.3 National Youth Policy – Towards 2020

The National Youth Policy covers the period between 2015 and 2020 and is aimed at youths from ages 13 to 30. Three interlocking pillars shape the policy. The first pillar focuses on the reality of Maltese youths in today's society including the challenges they face and the shifting of ideas from traditional ones. The second pillar is based on the development of youth policy at a national and European scale. Lastly, the third pillar is the Government's policy for greater democratic participation, equitable economic and social progress for all, and inclusive change.

4.2.4 Cultural Heritage Act of 2002 (Act VI of 2002)

The Cultural Heritage Acts states that the Superintendence of Cultural Heritage (SCH) functions as the regulating body endowed with fulfilling the duties of the State in the protection of the cultural heritage. Archaeological monitoring is imposed by the SCH in accordance to the Act.

In compliance with the Cultural Heritage Acts CULTURAL HERITAGE ACT, archaeological monitoring must be carried out throughout the excavation phase of any development in order to ensure any accidental discoveries are appropriately protected and handled. In the case of discoveries, accidental or otherwise, the Superintendent must immediately be informed and the object must be kept *in situ*. Every movable object forming part of the cultural heritage discovered in any location within the Maltese Islands, whether found in authorized or illegal excavations or explorations or by accident in the course of any works or any other manner, shall belong to the State.

4.2.5 National Cultural Policy: Public Consultation Document (2021)

The NATIONAL CULTURAL POLICY, published in 2021, sets a policy framework for local culture and the arts and has a mission to *"integrate culture in national development with a global outlook that contributes to sustainable development"*. The policy addresses the setback caused by the COVID-19 pandemic and establishes a number of objectives, these being:

- Strengthening cultural governance
- Increasing cultural access and widening participation
- Elevating artists and professionals' status in the cultural and creative sectors
- Improving artistic and cultural education
- Developing cultural infrastructure
- Protecting and safeguarding cultural heritage
- Promoting a culturally distinctive Gozo
- Advancing international cultural relations

4.3 ENERGY AND CLIMATE CHANGE POLICIES

4.3.1 National Energy and Climate Plan (NECP)

Malta's National Energy and Climate Plan (NECP) fulfils EU Regulation 2018/1999 which stipulates that each member country must compile an NECP to encompass the five dimensions of the Energy Union between 2021 and 2030. The five components of the Energy Union are summarised hereunder:

- Decarbonisation
- Energy efficiency
- Energy security
- Internal energy market
- Research, innovation and competitiveness

4.3.2 National Energy Policy (2012)

MALTA'S NATIONAL ENERGY POLICY stipulates policy measures related to energy generation and usage reduction. The Policy encompasses the five components of the Energy Union, as outlined in the previous section.

The guidelines and policy areas of the Policy are valid until 2030. However, it is pertinent to note that the Maltese Government have already implemented some measures, superseded others and rendered some of the irrelevant.

4.3.3 National Renewable Energy Action Plan

Malta's National Renewable Action Plan (NREAP) for 2015-2020 forms part of Malta's obligations for the RES Directive 2009/28/EC. This action plan outlines how Malta will achieve its national 2020 target of 10% renewable energy share in gross final energy consumption as stipulated in the Directive.

The NREAP encourages the use of renewable forms of energy, in preference to the use of fossil fuels. The shift towards cleaner renewable sources of energy coupled with the reduction of energy demand will subsequently also affect the overall carbon emissions of the country.

4.3.4 Low Carbon Development Strategy

The enacting of a Low Carbon Development Strategy LOW CARBON DEVELOPMENT STRATEGY is a requirement emerging from the following legal vehicles:

- UN Framework Convention on Climate Change–Decision 1/CP.16 The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention.
- The Paris Agreement ratified by Malta on 5th October 2016 and COP Decision 1/CP.21 'Adopting the Paris Agreement'.
- Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC and
- Malta's Climate Action Act 2015 (Chapter 543)

Malta requires a LCDS to help it achieve its greenhouse gas emission reduction targets. The country is already committed to reducing emissions by 19% compared to the 2005 levels for sectors not covered by the EU Emissions Trading Scheme. With the growing concerns of climate change, it is crucial that Malta acts quickly to ensure that the country can adapt to the changes and uncertainties that are inevitable in the future. Both the private and public sectors need to implement a range of measures to ensure the successful transition to a sustainable low carbon economy.

The LCDS divides the proposed into two main categories: mitigation measures and adaptation measures. The former relates to measures required to reduce the climate change impact and current consumption levels and atmospheric emissions. The latter incorporates measures that will help the Maltese islands adapt to any climatic and environmental variations induced by the impending climate change effects.

The Low Carbon Development Strategy is undergoing the SEA process.

4.3.5 National Strategy for Policy and Abatement Measures Relating to the Reduction of Greenhouse Gas Emissions (2009)

In 1994, Malta ratified the United Nations Framework Convention on Climate Change (UNFCCC) as a non-Annex I party. Before the ratification, Malta did not have any obligations under the Kyoto Protocol to limit or decrease its greenhouse gas (GHGs) emissions, not even under the EU 'burden-sharing agreement'.

However, the status of the Maltese state in this regard changed after the accession in the European Union. Consequently, Malta submitted the above-mentioned strategy according to Article 3(2) of Decision 280/2004/EC. This strategy required the introduction of policies and measures which, directly or indirectly, lead to limitations or reductions of emissions of GHGs.

4.3.6 National Climate Change Adaptation Strategy (2012)

The Strategy recommends a number of action plans to provide adaptation solutions to sectors which are particularly vulnerable to the impacts of climate change. At present, Malta does not have a legal framework which relates particularly to climate change adaptation.

However, there are other existing regulations and studies which tackle such an issue indirectly by adopting implementation measures over the next 10 to 50 years, for instance; Environmental Impact Assessments (EIA), water policy, terrestrial and marine ecosystems, infrastructure (including energy, transport, telecommunications, buildings, and waste) and health.

4.3.7 European Green Deal

The European Green Deal, which was approved in 2020, is promoting the circular economy model and the transition to a climate neutral economy by 2050. The first milestone to achieve this target is to reduce the EU's greenhouse gas emissions to a minimum of 50% by 2030. Moreover, the Deal aims to increase the sustainability of numerous sectors of the economy, including energy, infrastructure, industry and transport. Through this Deal, the EU also aims to reduce pollution to safeguard

human, animal and plant life, promote clean products and technologies and ensure a just and inclusive transition.

4.4 OTHER ENVIRONMENTAL POLICIES

Other relevant environmental policies that have been consulted as part of this SEA are listed below:

European Directives

- MARINE STRATEGY FRAMEWORK DIRECTIVE 2008/56/EC (MSFD)
- WATER FRAMEWORK DIRECTIVE 2000/60/EC (WFD)
- HABITATS DIRECTIVE 92/43/EEC
- BIRDS DIRECTIVE 2009/147/EC

National Policies, Documents, Regulations and Legislation

- STATE OF THE ENVIRONMENT REPORT (2018)
- THE NATIONAL ENVIRONMENTAL POLICY (2012)
- THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (2012)
- FLORA, FAUNA AND NATURAL HABITATS PROTECTION REGULATIONS (S.L. 549.44)
- Intent and Objectives: National Biodiversity Strategy and Action Plan to 2030
- THE WASTE MANAGEMENT PLAN (2021)
- THE WATER CATCHMENT MANAGEMENT PLANS (2011 & 2016)
- QUALITY REQUIRED OF SURFACE WATER INTENDED FOR THE ABSTRACTION OF DRINKING WATER REGULATIONS OF 2002 (S.L. 549.21)
- THE BATHING WATER QUALITY REGULATIONS (2009)
- THE AIR QUALITY PLAN FOR THE MALTESE ISLANDS (2010)
- WELLBEING FIRST: A VISION FOR MALTA'S ENVIRONMENT, NATIONAL STRATEGY FOR THE ENVIRONMENT 2050
- THE LIMITATION OF EMISSIONS OF CERTAIN ATMOSPHERIC POLLUTANTS REGULATIONS (2018)

5 ENVIRONMENTAL BASELINE

The environmental baseline data for this Environment report document evaluated in Sections 5.1 to 5.8 mainly tracks the progress of the different environmental themes presented in Table 2.

5.1 AIR QUALITY

Air quality is a top-priority environmental concern for Malta. The authorities have given it increasing importance over recent years, including on the national political agenda. This concern arises because of the direct link of air quality to the quality of public human health and ecosystems – terrestrial, freshwater and marine. In order for Malta to conform with the EU Air Quality Directives, it must avoid, prevent and reduce the impact of harmful air emissions by abiding with set thresholds. In response to these Directives, the ERA has implemented Malta’s National Air Pollution Control Programme (2019)³ that builds on the Air Quality Plan for the Maltese Islands (2010).⁴ The Plan sets out the basic framework for the measurement of air quality in Malta and the specific reduction of PM₁₀ and NO₂ concentrations which have shown annual exceedances since 2004 and 2006, respectively. This air quality plan outlines measures to reduce and, if possible, prevent further exceedances.

The ERA continuously measures the concentration of a number of pollutants, and compares the results to the emission limit values (ELVs) established by EU legislation. Trained staff collect these measurements using specialised equipment at the five real-time monitoring stations and a sixth mobile monitoring station as follows:

- Traffic site in Msida
- Traffic site in St Paul’s Bay
- Urban background in Żejtun
- Urban site in Attard
- Rural background in Għarb, Gozo
- Additional mobile monitoring station in Senglea

These monitoring stations provide hourly real-time data for the concentrations of a number of pollutants, as outlined in Table 3.⁵

The fixed station network is complemented by a passive diffusion tube network (Figure 1), which consists of approximately 98 NO₂ and 90 VOC passive diffusion tubes located around Malta and Gozo. These are exposed for a period of four weeks at a time for a total of 13 exposure periods per year.⁶

³ ERA (2019). Malta’s National Air Pollution Control Programme. https://era.org.mt/wp-content/uploads/2020/06/NAPCP_ISBN_PDF_web.pdf

⁴ MEPA (2010). Air Quality Plan for the Maltese Islands. <https://era.org.mt/wp-content/uploads/2019/05/AQ-Plan.pdf>

⁵ ERA (2022). *Real Time Air Quality Network*. <https://era.org.mt/topic/real-time-air-quality-network/>.

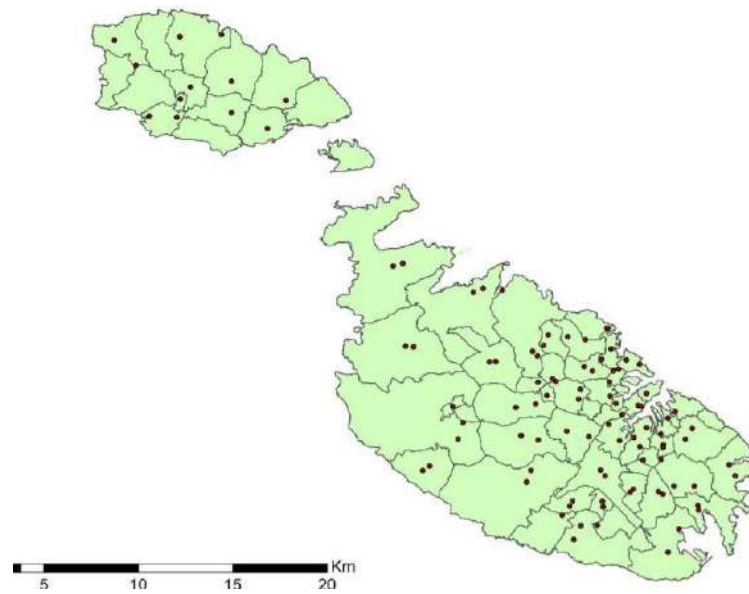


FIGURE 1: PASSIVE DIFFUSION TUBE NETWORK IN MALTA⁶

⁶ ERA (2018). *State of the Environment Report 2018*. <https://era.org.mt/wp-content/uploads/2019/05/SoER-Summary-Report-2018.pdf>

TABLE 3: POLLUTANTS MONITORED REAL-TIME BY ERA AND THEIR EU AND WHO LIMITS⁵

POLLUTANT	EU AMBIENT AIR QUALITY DIRECTIVES			WHO GUIDELINES		MALTA MONITORING STATIONS						
	AVRG PERIOD	LV (MG/M ³)	EXCEEDANCES/YEAR	AVRG PERIOD		AQG (MG/M ³)	GħARB	ATTARD	MSIDA	ŻEJTUN	SPB	SENGLEA
Particulate matter (PM ₁₀)	1 day	50	35 days	1 day	50	Yes	No	Yes	Yes	No	No	Yes
	1 year	40	N/A	1 year	20							
Particulate matter (PM _{2.5})	1 year	25	N/A	1 day	25	Yes	Yes	Yes	Yes	No	No	Yes
				1 year	10							
Carbon monoxide	Max 1 day 8-hour mean	10	N/A	1 hour	30,000	No	No	Yes	No	Yes	Yes	Yes
				Max 1 day 8-hour mean	10,000							
Nitrogen dioxide	1 hour	200	18 hours	1 hour	200	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	1 year	40	N/A	1 year	40							
Ozone	1 hour	180	N/A	Max 1 day 8-hour mean	100	Yes	Yes	Yes	Yes	Yes	Yes	No
	Max 1 day 8-hour mean	120	25 days									
Sulphur	1 hour	350	24 hours	10 minutes		500	Yes	No	Yes	Yes	Yes	Yes

POLLUTANT	EU AMBIENT AIR QUALITY DIRECTIVES			WHO GUIDELINES	MALTA MONITORING STATIONS						
	AVRG PERIOD	LV (MG/M ³)	EXCEEDANCES/YEAR	AVRG PERIOD	AQG (MG/M ³)	GĦARB	ATTARD	MSIDA	ŻEJTUN	SPB	SENGLEA
dioxide	1 day	125	3 days	1 day	20						
Benzene	1 year	5	N/A	1 year	1.7 (ref limit)	No	No	Yes	No	Yes	No
Nitric oxide	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes
Air pressure	N/A	N/A	N/A	N/A	N/A	No	Yes	Yes	Yes	Yes	Yes
Humidity	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes
Temperature	N/A	N/A	N/A	N/A	N/A	Yes	Yes	No	Yes	Yes	Yes
Wind direction	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes
Wind speed	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes

The European Environmental Agency (EEA) Air Quality in Europe – 2021 Report highlights that air pollution within Europe is still a major concern. The report conveys the values of various pollutants recorded at monitoring stations and compares these values with the EU thresholds and much stricter WHO long-term guidelines (2021).⁷

In 2019, recorded PM₁₀ levels slightly exceeded the EU thresholds at 1 of the stations (Msida) and significantly exceeded the WHO guidelines at all stations. Similarly, only one station (Gharb) recorded exceedances in the EU thresholds for ozone but all stations slightly exceeded the WHO guidelines for this chemical. None of the PM_{2.5} concentrations exceeded the EU thresholds for PM_{2.5} at any of the monitoring stations, but the concentrations did exceed the WHO guidelines. NO₂ values remained below the EU thresholds but three of the stations (Msida, Attard and Żejtun) surpassed the WHO guidelines.

The EEA historical pollution database indicates that the levels of PM₁₀, PM_{2.5}, NO₂ across the Maltese islands declined between the period of 2013 and 2020 (no data available for ozone).⁸ Recent declines in levels (2020 onwards) should be treated with caution as they are likely attributable to the COVID-19 pandemic lockdowns. During these lockdowns, many polluting generating activities slowed down/stopped, in turn reducing the levels of emissions.

5.1.1 Pollution Sources

Malta's State of the Environment Report (SOER) published in 2018⁶ identifies numerous sources for the aforementioned air pollutants, as listed in Table 4. Active construction sites are also considered to be a primary source of particulate matter in the Maltese Islands.

TABLE 4: POLLUTANTS AND THEIR PRIMARY SOURCES⁶

POLLUTANT	SOURCE(S)
Particulate matter (PM ₁₀ and PM _{2.5})	Fuel combustion in power generation Fuel combustion in road transport Incineration Tyre and brake wear Road wear
Ozone (O ₃)	A secondary pollutant that results from reactions involving precursor gases such as volatile organic compounds and nitrogen oxides

⁷ WHO (2021). WHO Global Air Quality Guidelines 2021. https://cdn.who.int/media/docs/default-source/air-quality-and-health/who-global-aqgs.-afro-presentation-2-nov-2021_final.pdf?sfvrsn=7d2f3da7_5

⁸ EEA (2022). Dashboard: Air Quality Statistics for the main air pollutants. <https://www.eea.europa.eu/data-and-maps/dashboards/air-quality-statistics>.

POLLUTANT	SOURCE(S)
Nitrogen Oxides (NO and NO ₂)	Combustion sources (results in NO mostly, with subsequent oxidation to NO ₂)
Sulphur Dioxide (SO ₂)	Combustion of fuels containing high levels of sulphur (e.g. Heavy Fuel Oil in thermal power plants)
Benzo[<i>a</i> -]pyrene (BaP)	Incomplete combustion of fuels and rubber-tyre wear
Carbon monoxide (CO)	Incomplete combustion of fuels in road transport
Benzene	Incomplete combustion of fuel in road transport Handling and distribution of petrol
Arsenic	Metal smelters Coal combustion
Cadmium	Non-ferrous metal production Iron and steel production Cement production Waste incineration Stationary combustion of fossil fuel
Nickel	Combustion of fuel oil and coal in stationary plants Combustion of fuel in ships Waste incineration Steel manufacture Electroplating
Lead	Combustion of fossil fuel Waste incineration Production of non-ferrous metals Production of iron and steel Production of cement
Mercury	Combustion of coal

5.1.2 Particulate Matter

Particulate matter (PM) consists of very small suspended solid or liquid particles, which have both short- and long-term effects on human health. Such particles originate mainly from fuel combustion in transport and power generation, quarrying and construction dust, mechanically-generated dust, tyre and brake abrasion, and aerosols of transboundary origin. Dust from natural sources such as atmospheric sea salt and wind-blown dust also contribute to PM.

5.1.2.1 PM_{10}

The level of PM_{10} was relatively stable between 2013 and 2015 (ranging from 29.398 $\mu\text{g}/\text{m}^3$ to 30.201 $\mu\text{g}/\text{m}^3$).⁹ In contrast, the levels fluctuated substantially between 2015 and 2018 (lowest level in 2017 = 26.689 $\mu\text{g}/\text{m}^3$ and highest level in 2016 = 33.170 $\mu\text{g}/\text{m}^3$), before settling into a steady decreasing trend.⁹ The annual mean values did not exceed the EU yearly threshold of 50 $\mu\text{g}/\text{m}^3$ between 2013 and 2020. Recent declines in levels (2020 onwards) should be treated with caution as they are likely attributable to the COVID-19 pandemic lockdowns. During these lockdowns, many polluting generating activities slowed down/stopped, in turn reducing the levels of emissions. However, it does not mean that daily exceedances did not occur during the same time period.

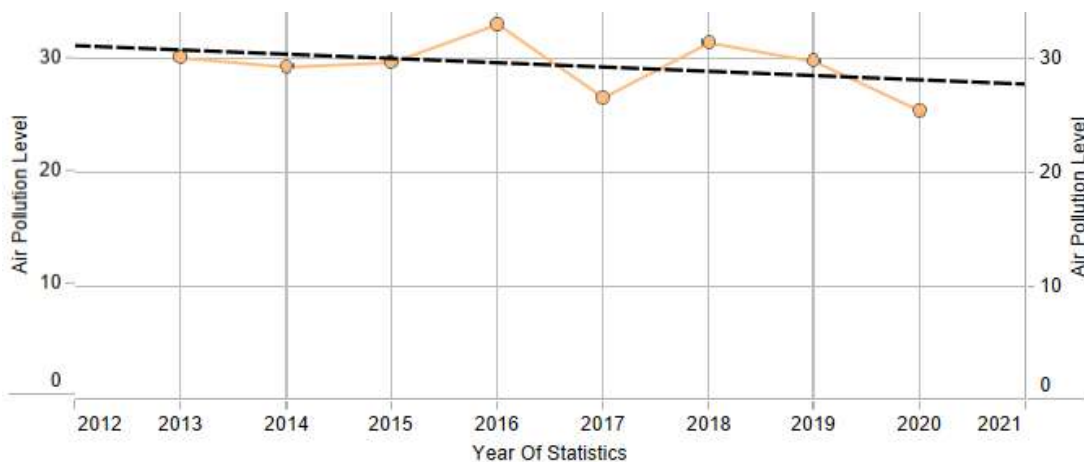


FIGURE 2: LEVELS OF PM_{10} IN MALTA BETWEEN 2013 AND 2020⁹

5.1.2.2 $PM_{2.5}$

The level of $PM_{2.5}$ across the Maltese Islands has fluctuated over the recent years, but has shown an overall steady decreasing trend. Annual mean levels peaked in 2015 reaching 13.311 $\mu\text{g}/\text{m}^3$ and dipped down to the lowest in 2020 (annual mean level = 9.447 $\mu\text{g}/\text{m}^3$).⁸ Recent declines in levels (2020 onwards) should be treated with caution as they are likely attributable to the COVID-19 pandemic lockdowns. During these lockdowns, many polluting generating activities slowed down/stopped, in turn reducing the levels of emissions. However, a preliminary analysis showed that the daily average measured concentrations of $PM_{2.5}$ did not show any reduction in response to the COVID-19 measures (Figure 4).¹⁰ The levels of $PM_{2.5}$ remained below the EU yearly threshold of 40 $\mu\text{g}/\text{m}^3$ through-out the period 2013 – 2021. However, it does not mean that daily exceedances did not occur during the same time period.

⁹ EEA (2022). Key air quality statistics for the main air pollutants. <https://www.eea.europa.eu/data-and-maps/dashboards/air-quality-statistics>.

¹⁰ ERA (2020). A preliminary assessment related to the impact of Covid-19 measures on air quality in Malta. https://era.org.mt/wp-content/uploads/2020/12/Covid-19-and-Air-Quality_MT-Report_Final.pdf.

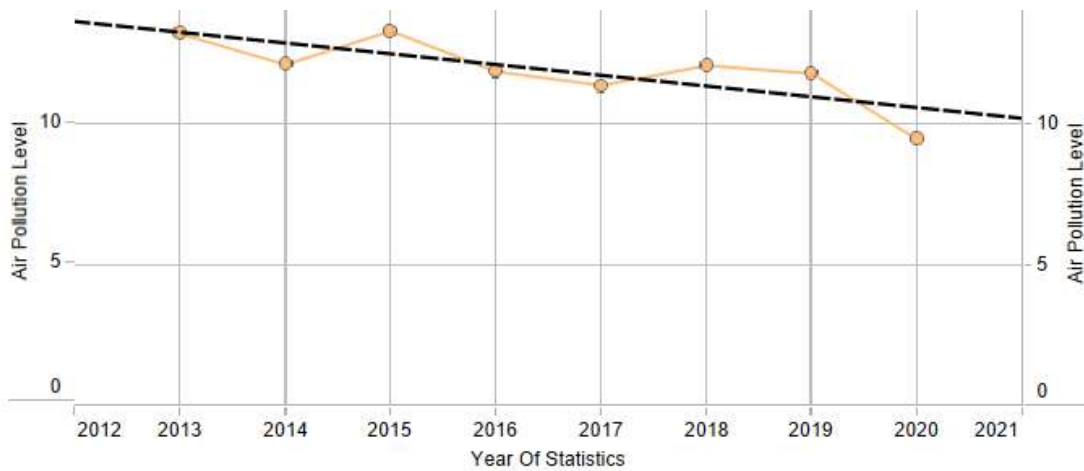


FIGURE 3: ANNUAL MEAN LEVELS OF PM_{2.5} IN MALTA BETWEEN 2013 AND 2020⁹

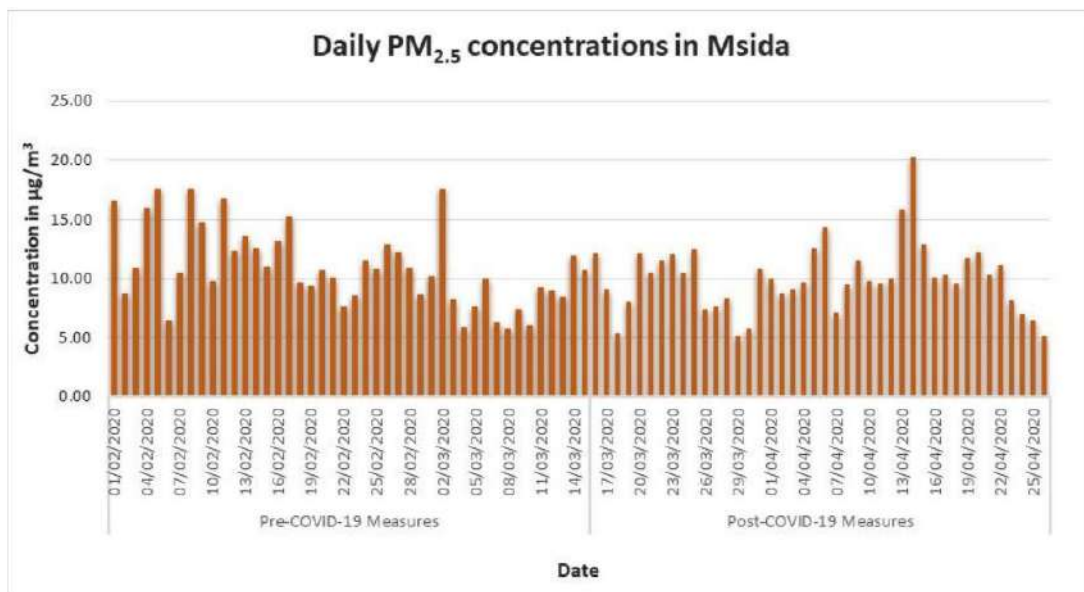


FIGURE 4: MSIDA DAILY PM_{2.5} CONCENTRATIONS PRE- AND POST-COVID MEASURES¹⁰

5.1.3 Ozone

Air quality standards include concentrations of ozone. Vehicles with internal combustion engines produce nitrogen oxides and volatile organic compounds (VOCs). These engine by-products react in the troposphere which form ozone. Ozone is also produced when emissions from power stations react in the presence of sunlight. It is a harmful pollutant in low atmospheric levels since it causes respiratory and cardiovascular health issues, and damages plant health. Three limit values are established by the EU and WHO for ozone, which require real time monitoring, as follows:

- 180µg/m³ hourly threshold for human health protection, which should never be exceeded;
- 120µg/m³ 8-hourly running average limit value for human health protection, not to be exceeded more than 25 times per year; and
- 100µg/m³ 8-hourly running average limit value for human health protection.

The hourly average concentrations for ozone in 2017 were 98.1 $\mu\text{g}/\text{m}^3$, 77.5 $\mu\text{g}/\text{m}^3$, 55.6 $\mu\text{g}/\text{m}^3$ and 75.1 $\mu\text{g}/\text{m}^3$ in Għarb, Attard, Msida and Żejtun, respectively (Figure 5).⁵ On 8th August 2017, the Għarb station recorded 2 exceedances in the hourly threshold. Conversely, the same station recorded 71 exceedances in the 8-hourly limit. For the same limit, the Attard station recorded 15 exceedances whereas that of Żejtun recorded 4 exceedances (Figure 6). The data indicates that the highest concentrations and exceedances occur in the areas with lowest traffic, i.e. rural areas. Such a typical pattern occurs since nitrogen oxides from road traffic quickly react with ozone.

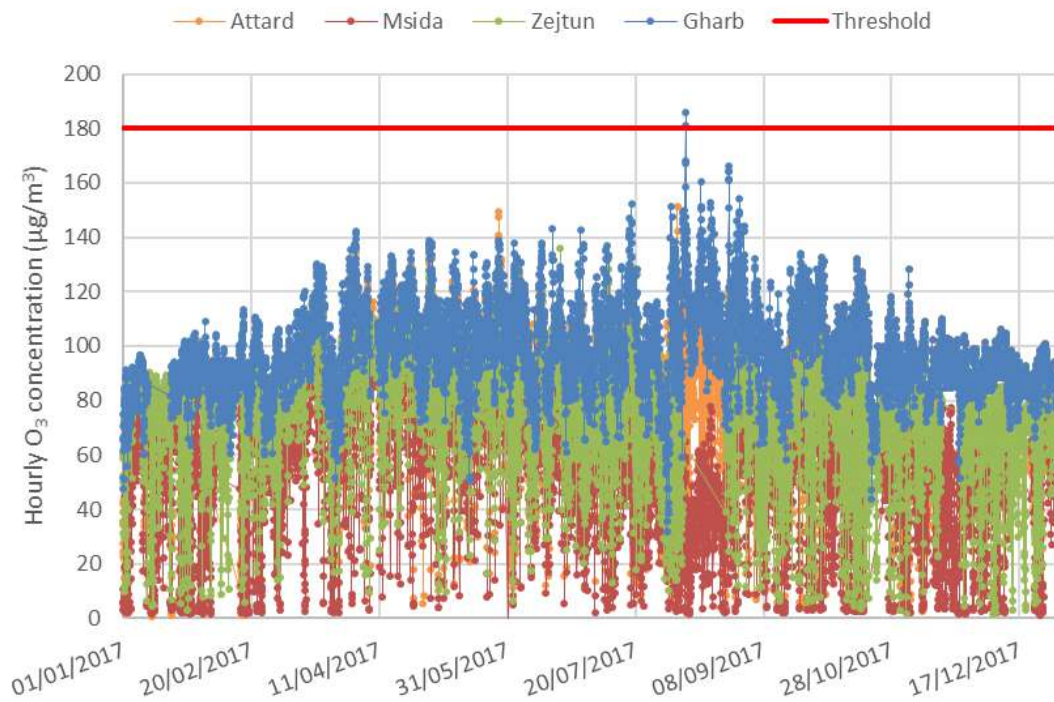


FIGURE 5: HOURLY O₃ CONCENTRATIONS FOR 2017⁵

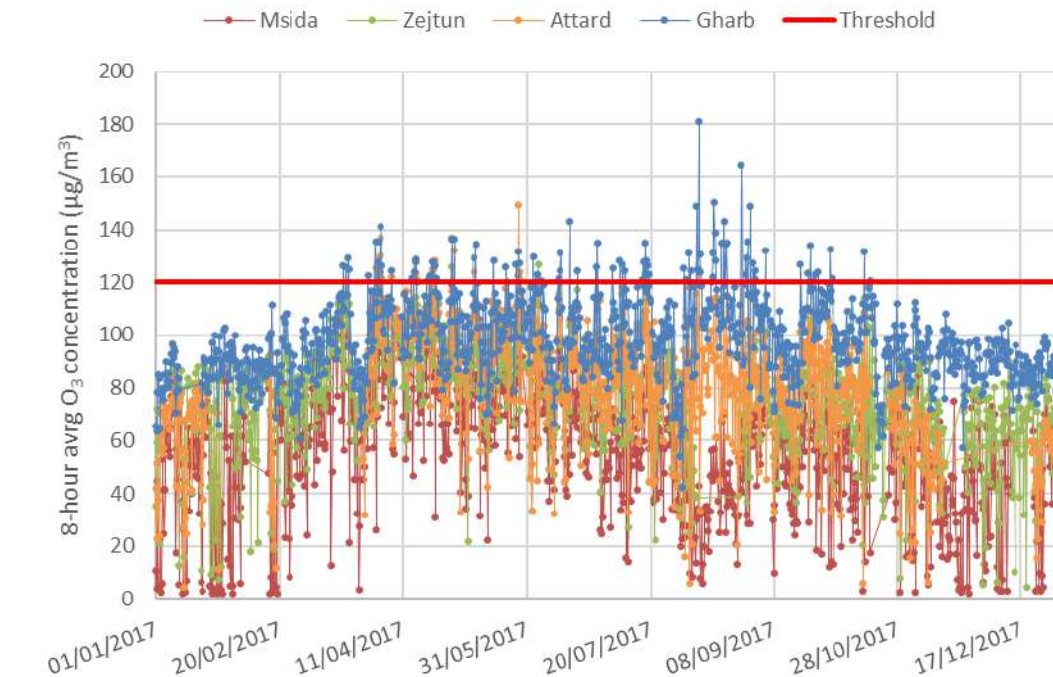


FIGURE 6: 8-HOURLY AVERAGE O₃ CONCENTRATIONS FOR 2017⁵

5.1.4 Benzenes and VOCs

Apart from being responsible for the formation of ozone at low atmospheric levels, benzene and other VOCs also cause respiratory irritations and genetic and nervous disorders, depending on various factors such as exposure duration. Processes such as incomplete and inefficient combustion emit such pollutants. Their liquid counterparts may also evaporate directly into the atmosphere and the ERA monitors benzene, toluene, ethylbenzene and xylenes (BTEX).

Average annual concentrations of benzene declined by 82.9% between 2013 and 2017 at the Għarb station and by 46.2% at the Msida station. None of the concentration levels of benzene exceeded the EU limit value of 5µg/m³.⁵ The decline in benzene and other VOCs level is likely due to lower benzene and concentrations in imported gasoline. The WHO does not stipulate a threshold value, but instead advises a reference limit of 1.7µg/m³. Malta did not exceed this reference limit, specifically between 2014 and 2017 in Għarb and 2015 and 2017 in Msida.⁵

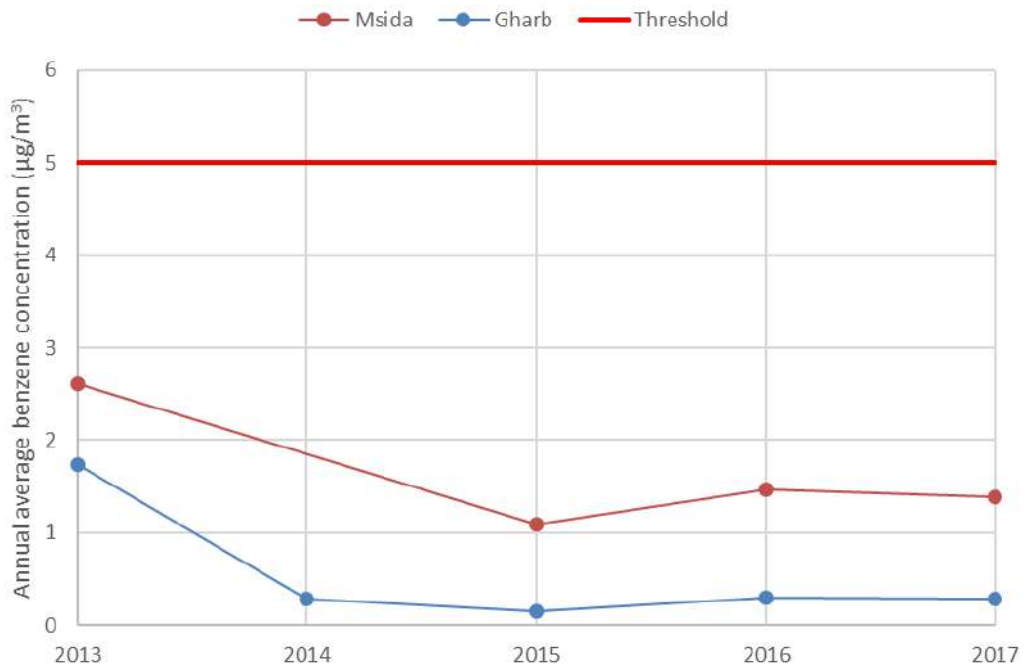


FIGURE 7: ANNUAL BENZENE CONCENTRATION FOR 2013-2017⁵

5.1.5 Nitrogen Dioxide

Nitrogen dioxide is another air quality parameter of importance according to EU legislation. Fuel combustion such as industrial facilities and road transport emit NO₂. Nitrogen dioxide forms acids upon contact with water, and can convert to nitrates or other harmful compounds when reacting with atmospheric chemicals. NO₂ forms part of a group of nitrogen oxides (NO_x) which also includes nitrogen monoxide (NO). The latter makes up the majority of NO_x emissions. NO_x ultimately contributes to the formation of ozone and PM.

With the exception of 2015, when NO₂ levels dropped down to an annual mean average of 8.614 µg/m³, levels pre 2017 were fairly stable ranging between 17.554 µg/m³ and 18.324 µg/m³.⁹ Post 2017 the levels had decreased relatively quickly down to 12.292 µg/m³ in 2020.⁹ The annual mean average NO₂ concentrations did not exceed the 40 µg/m³ between 2013 and 2020.

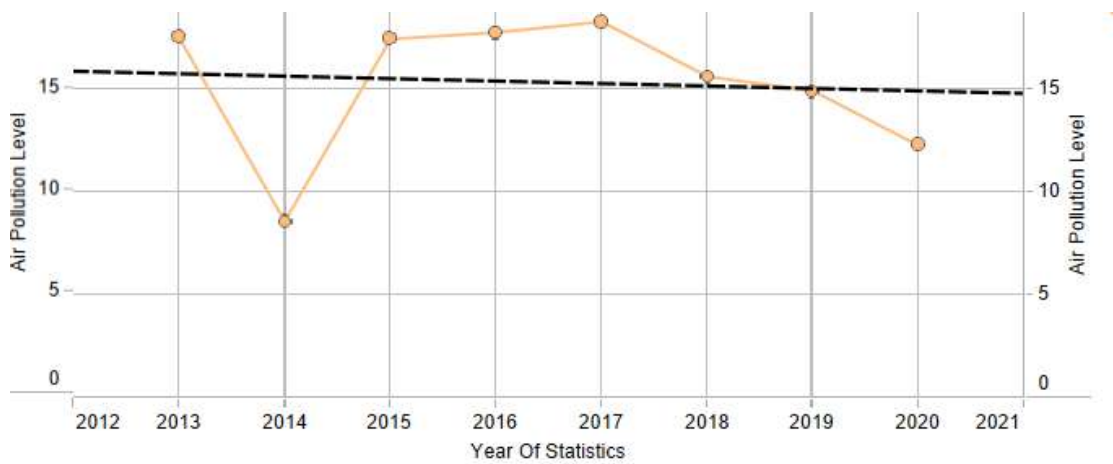


FIGURE 8: ANNUAL MEAN LEVELS OF NO₂ IN MALTA BETWEEN 2013 AND 2020⁹

As a result of the COVID-19 measures introduced in March of 2020, Figure 9 shows a reduction in daily average NO₂ measured concentrations in Msida compared to those measured pre-COVID-19 measures. This reduction was initially recorded on the 16th March 2020, 3 days after schools, childcare centres and the University shut down and teleworking was encouraged.¹⁰

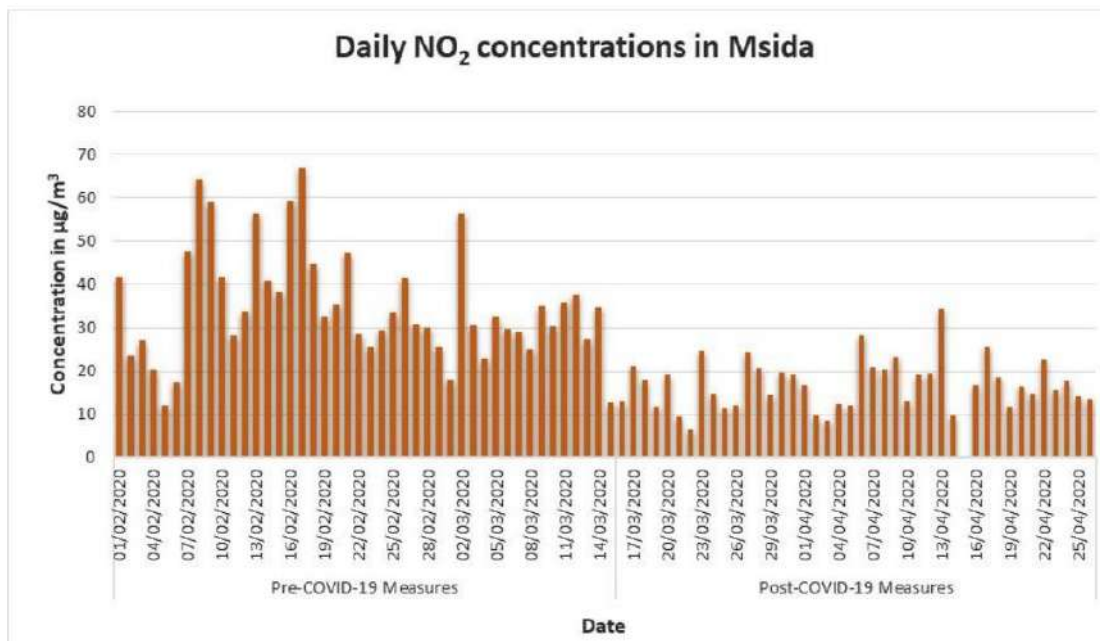


FIGURE 9: MSIDA DAILY PM_{2.5} CONCENTRATIONS PRE- AND POST-COVID MEASURES¹⁰

5.1.6 Sulphur Dioxide

Sulphur dioxide adversely affects the human respiratory system and lung function.⁶ It damages aquatic ecosystems, soils, vegetation and limestone buildings.⁶ Sulphur dioxide originates from burning of sulphur-containing fuels, including biofuels, in power stations and transport (amongst others).⁶ In addition, international shipping is a source of sulphur dioxide pollution and is a matter of increasing concern.⁶ Although natural sources of sulphur also exist (most notably active volcanoes), no such sources exist in Malta. Sulphate also combines with other atmospheric compounds to become

particulate matter and is therefore an important source of ultra-fine particles such PM_{2.5}.

All Member States of the EU must maintain the concentration of sulphur dioxide below the hourly limit value of 350 µg/m³ with a maximum of 24 permitted exceedances per year and a daily limit value of 125 µg/m³ with a maximum of 3 permitted exceedances per year.¹¹

The levels of sulphur dioxide have decreased significantly over the recent years. In 2013 the SO₂ annual mean was 2.184 µg/m³, compared to 2020 when the value was 0.735 µg/m³.⁹

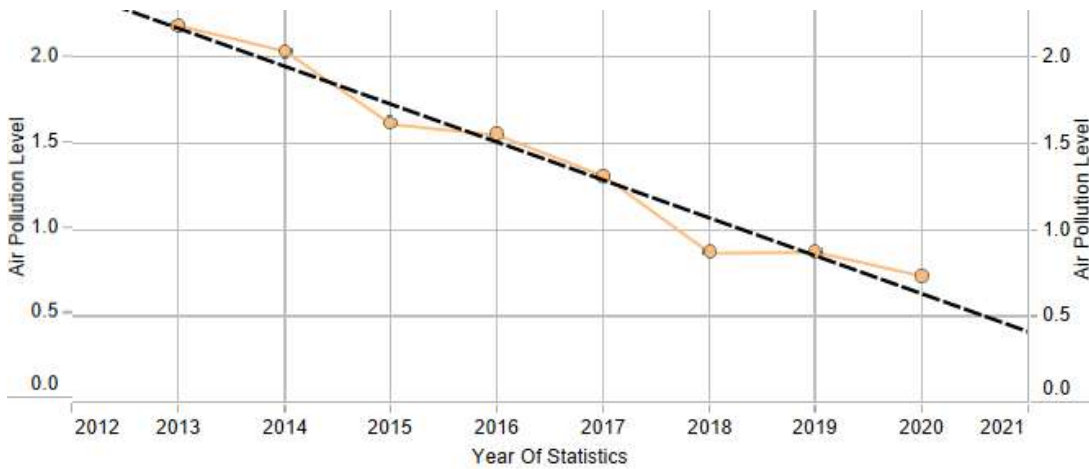


FIGURE 10: ANNUAL MEAN LEVELS OF SO₂ IN MALTA BETWEEN 2013 AND 2020⁹

5.1.7 Emission Ceilings

The ERA has provided data for the 2018 emissions and their emission ceilings, as delineated in Table 5. The 2018 concentration of NO_x is just below the 2020 ceiling and significantly above the 2025 and 2030 ceilings. The concentration of NMVOC is just above the 2020, 2025 and 2030 ceilings. The concentrations of SO₂ and NH₃ are below the 2020, 2025 and 2030 emission ceilings. The PM_{2.5} concentration is well above the 2020, 2025 and the 2030 ceilings.

TABLE 5: NATIONAL EMISSIONS AND THEIR EMISSION CEILINGS¹²

	POLLUTANT				
	NO _x	NMVOC	SO ₂	PM _{2.5}	NH ₃
2019 emissions (tonnes)	5301	2258	160	1336	371

¹¹ EEA (2014). Sulphur dioxide - Hourly limit value for the protection of human health. <https://www.eea.europa.eu/data-and-maps/figures/sulphur-dioxide-hourly-limit-value-for-the-protection-of-human-health-6>

¹² Communication with the ERA in October 2020

	POLLUTANT				
	NO _x	NM VOC	SO ₂	PM _{2.5}	NH ₃
2020 emission ceilings (tonnes)	5565	1766	2784	542	1797
2025 emission ceilings (tonnes)	3790	1720	1695	451	1609
2030 emission ceilings (tonnes)	2015	1675	605	361	1422

5.2 BIODIVERSITY

Biodiversity encompasses all living organisms and habitats which they occupy. It is an integral component of an area's/country's natural heritage. The quintessential aspect of nature is captured by biological diversity, since it encompasses an assortment of species and habitats at different taxonomic levels of biological organisation in terrestrial and aquatic systems, namely:

- Genetic diversity
- Species diversity
- Habitat diversity
- Ecosystem diversity

The more diverse and complex a biological system is, be it terrestrial, freshwater or marine, the healthier it tends to be and the more resistant it is to external pressures.¹³ Communities of living organisms also interact with non-living components of their environment to form a unified and effective system.¹¹ Since the health of the physical environment directly affects the health of the organisms within, it is important that we maintain it in good condition.

Biodiversity also produces an endless list of goods and life-supporting services to human beings, termed as “ecosystem services”. Such services are divided into four categories:¹⁴

1. **Supporting services:** such as primary production, nutrient cycling, soil formation, pollination, etc.
2. **Provisioning services:** such as provision of food, raw materials, genetic resources, water, etc.

¹³ WHO (2015). *Biodiversity and Health*. <https://www.who.int/news-room/fact-sheets/detail/biodiversity-and-health>.

¹⁴ National Wildlife Foundation (2022). *Ecosystem services*. <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Understanding-Conservation/Ecosystem-Services>.

3. **Regulating services:** such as climate regulation, predation (to regulate prey/pest populations), waste decomposition, water/air purification, etc.
4. **Cultural services:** such as historical, recreational, spiritual, cultural, etc.

5.2.1 Protected Sites

Due to the importance of certain habitats and species, national and international regulatory bodies designate such habitats and species as protected areas. Ecological experts study these sites in detail to establish their role and importance, along with specific measures to preserve and improve their environmental and ecological health (i.e. biodiversity). Across the Maltese Islands, 28.9% (91.3km²) of the land area is covered by one designation or another, or even more than one. Included in this is 13.8% (over 43.6km²) of land area, which forms part of the EU Natura 2000 network of protected areas. Furthermore, 35.5% of Maltese waters (4,138km²) have been designated as marine protected areas.¹⁵ The number of internationally protected sites, and consequently the areas have increased over the recent years, as illustrated in Figure 11 and Figure 12.

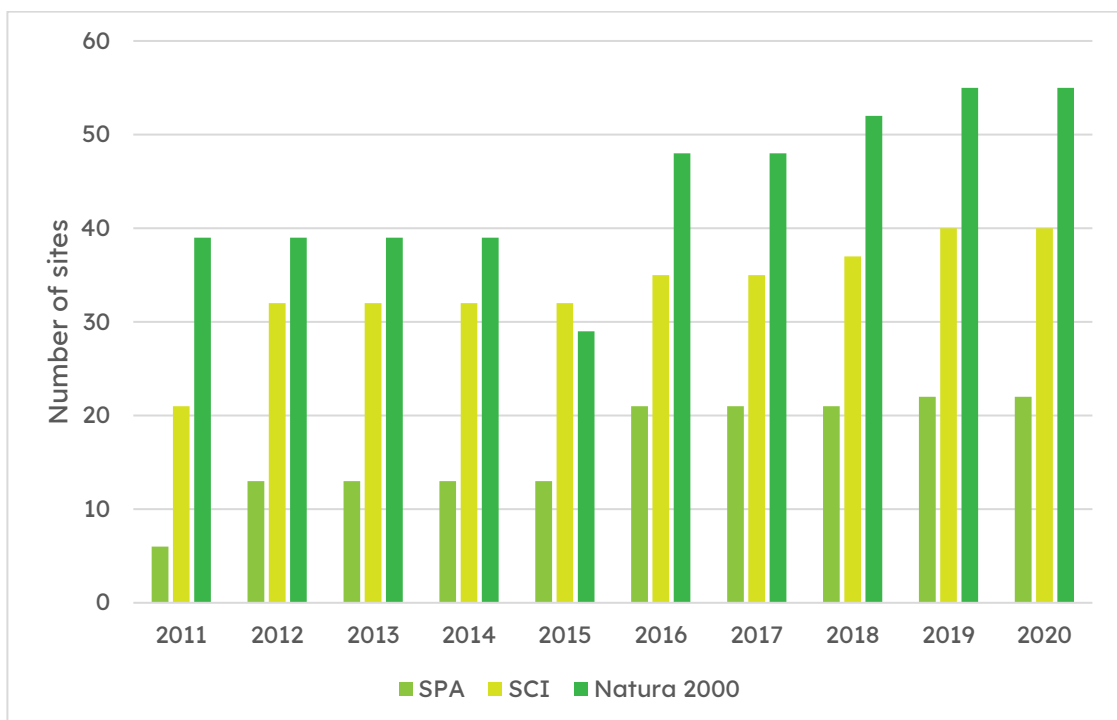
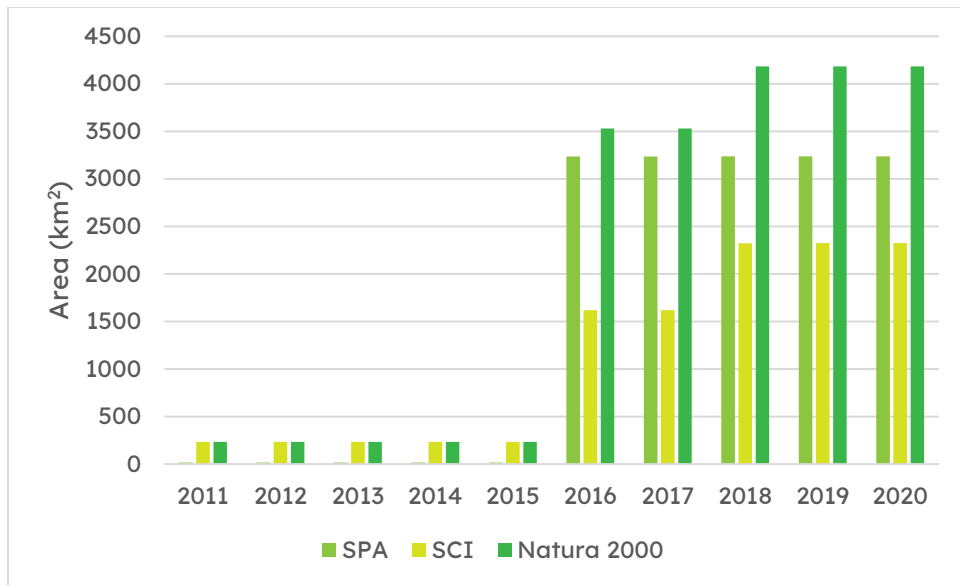


FIGURE 11: NUMBER OF DESIGNATED SPA, SCI AND NATURA 2000 SITES (2011 - 2020)¹⁶

¹⁵ ERA: Protected Areas – National. <https://era.org.mt/topic/protected-areas-national/>

¹⁶ European Environment Agency (2022). Natura 2000 barometer. <https://www.eea.europa.eu/data-and-maps/dashboards/natura-2000-barometer>

FIGURE 12: AREA OF DESIGNATED SPA, SCI AND NATURA 2000 SITES (2011 - 2020)¹⁶

Maltese legislation currently defines a total of 263 protected sites, comprising of 244 terrestrial sites and 18 marine sites. Table 6 outlines the trends of national designations given to protected sites.

TABLE 6: INTERNATIONAL AND NATIONAL DESIGNATIONS AS OF 2013 AND 2022

DESIGNATION		NUMBER OF SITES (2013) ¹⁷	NUMBER OF SITES (2022) ¹⁸	% CHANGE
National legislation	Area of Ecological Importance	20	24	+ 120.0
	Site of Scientific Importance	8	10	+ 125.0
	Area of Ecological Importance & Site of Scientific Importance	38	42	+ 110.5
	Nature Reserves/Parks	3	4	+ 133.3
	Tree Protection Area	29	60	+ 206.9
	Historical Trees having an Antiquarian importance	6	6	+ 0.0
	Bird Sanctuary	26	26	+ 0.0

¹⁷ MEPA (2012). The Environment Report Indicators 2010-2011. https://era.org.mt/wp-content/uploads/2019/05/TERI-2010_2011.pdf

¹⁸ ERA (2022). <https://era.org.mt/topic/database-on-designated-areas-in-national-law/>

DESIGNATION	NUMBER OF SITES (2013) ¹⁷	NUMBER OF SITES (2022) ¹⁸	% CHANGE
Protected Beaches	11	11	+ 0.0

5.2.1.1 International Designations

The ERA classifies the sites protected by international legislation into one or more categories, as described in Table 7.

TABLE 7: INTERNATIONAL DESIGNATION, LEGISLATION AND MALTESE SITES¹⁹

Designation	Legislation	Malta sites
Wetlands of International Importance (Ramsar sites)	CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE (OR UN Ramsar Convention)	L-Ghadira and Is-Simar
Special Protection Areas	CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT AND THE COASTAL REGION OF THE MEDITERRANEAN (UN Barcelona Convention)	L-Ghadira, Il-Gżejjer ta' San Pawl (St Paul's Islands), Filfla & surrounding islets, and Haġret il-Ġeneral (Fungus Rock)
Natura 2000 sites (Special Areas of Conservation and Special Protection Areas)	EC HABITATS DIRECTIVE (92/43/EEC) and EC BIRDS DIRECTIVE (2009/147/EC)	37 terrestrial sites and 18 marine sites
Areas of Special Conservation Interest (Emerald Network of Protected Areas)	COE BERN CONVENTION	Same as those of the Natura 2000 network

The EU Natura 2000 Network is a system of protected sites across the EU, designated under the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC), which merit special conservation measures since they support habitats and species of community interest. This network is one of the tools used by the EU to assist with

¹⁹ ERA: Protected Areas – International. <https://era.org.mt/topic/protected-areas-international/>

halting the loss of biodiversity. Malta has designated several of the ecological important sites as part of the EU Natura 2000 network.

Annex I of the Habitats Directive lists the habitats of international importance that require special conservation. The Directive refers to these habitats as Special Areas of Conservation (SAC). Schedule I of the Flora, Fauna and Natural Habitats Protection Regulation (S.L. 549.44) transposes this EU list of SAC areas into the local context.

In 2011, 13.3% and 5.2% of land area was designated as an SAC and SPA, respectively, as shown in Figure 13. As of 2022, 13.3% and 5.8% of Malta's land area was designated as SACs and SPAs, respectively. As of 2015, 35% of Maltese territorial waters formed part of the EU's Natura 2000 network (Figure 13),⁶ which has increased even further through more recent additions, as shown in Figure 14.

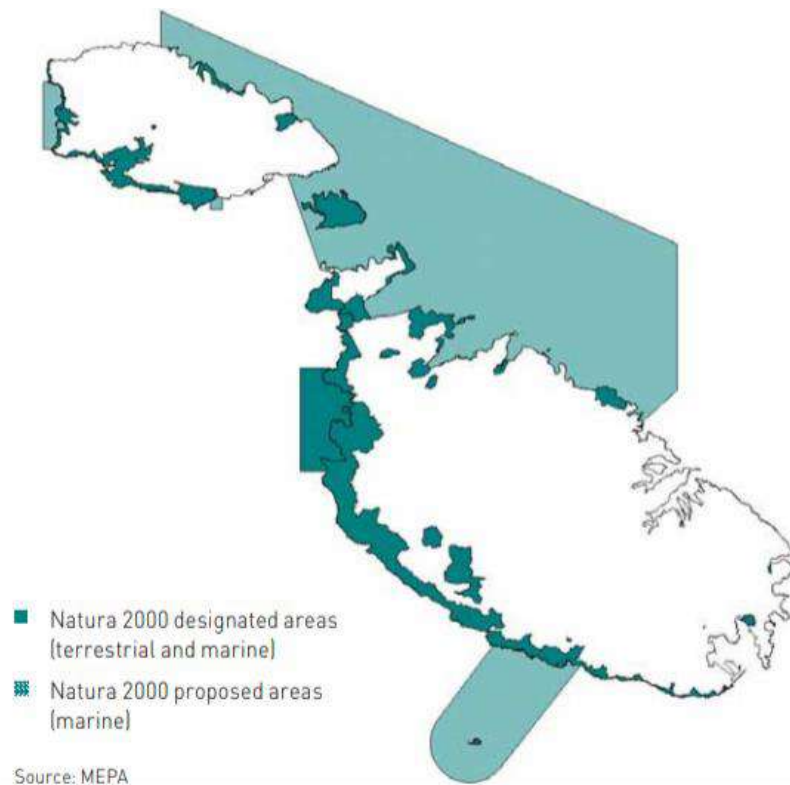


FIGURE 13: MALTESE NATURA 2000 NETWORK IN 2011¹⁷

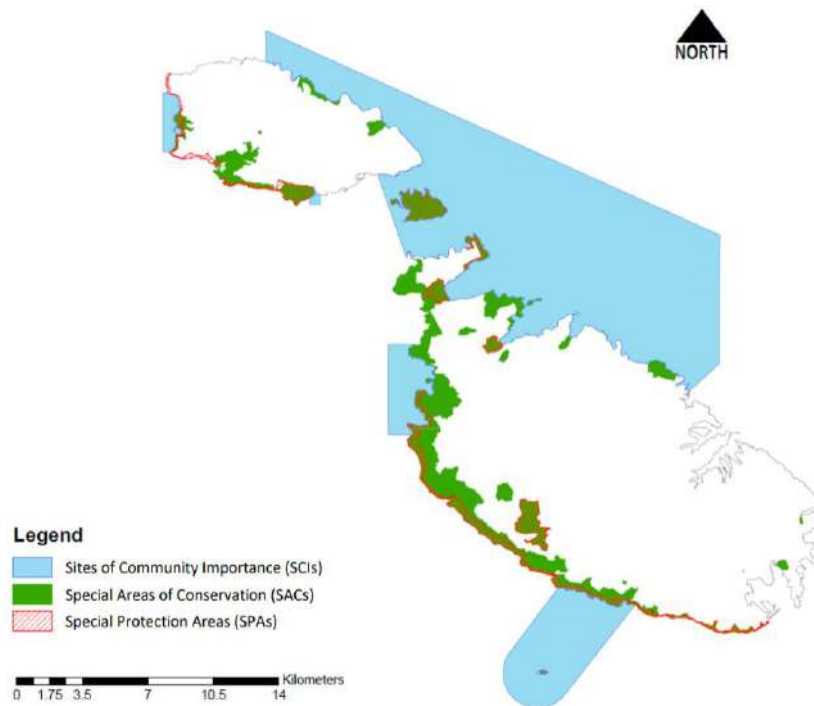


FIGURE 14: MALTESE NATURA 2000 NETWORK IN 2015⁶

5.2.1.2 National Designations

Local legislation transposes the EU directives into the local context. This ensures that the Maltese designated Natura 2000 Network site (pSCIs, SCIs, SACs & SPAs) are adequately protected. The local legislation also encompasses additional sites which are not of international importance; namely:

- Areas of Ecological Importance (AEIs)
- Sites of Scientific Importance (SSIs)
- Nature Reserves
- Tree Protection Areas
- Historical Trees having an Antiquarian Importance
- Bird Sanctuaries
- Protected Beaches

Between 2011 and 2020, the number of AEIs increased from 20 to 24, while the number of Sites of Scientific Importance (SSI)s increased from 8 to 10. In 2011, MEPA published the boundaries for 30 tree protection areas, covering 5.35km², with the aim of enhancing protection of Malta's important terrestrial ecosystems. Between 2011 and the time of writing, the number of tree protection sites has increased to 60.⁶

Malta has designated 3 nature reserves which afford protection to islets, as well as 26 bird sanctuaries. Since 2007, all beaches and swimming areas in close proximity to urban areas or major roads, including 11 specifically named beaches, were legally protected from hunting. Since 2011, ERA did not designate new nature reserves, bird sanctuaries and protected beaches.⁶

5.2.2 Protected Species

Some of the vast array of species that inhabit the Maltese Islands are endemic to the islands, i.e., they occur in the Maltese Islands due to long-term isolation and evolution. Some species inhabit an even smaller area, such as *Helichrysum melitense* which only inhabits the western cliffs of Gozo. Other species which occur in the Maltese Islands may occur only in the Mediterranean region, or parts thereof, rather than being specific to Malta; such species are endemic to their specific area of occupation.

Endemic species, while being of significance to Malta's biodiversity and natural heritage, are inherently vulnerable to pressures/threats since they require specific environmental conditions to survive, which are characteristically rare.

Similar to protected sites, some species are protected by both international and national legislation, while others are only protected for their national importance (refer to Table 8).

TABLE 8: PROTECTED SPECIES IN MALTA AND THEIR LEGISLATIVE FRAMEWORKS^{20,21}

DESCRIPTION	HABITATS DIRECTIVE	S.L. 549.44
Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation	Annex II	Schedule II
Animal and plant species of national interest whose conservation requires the designation of Special Areas of Conservation	N/A	Schedule III
Animal and plant species of community interest in need of strict protection	Annex IV	Schedule V
Animal and plant species of national interest in need of strict protection	N/A	Schedule VI
Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures	Annex V	Schedule VII
Animal and plant species of national interest whose taking in the wild and exploitation may be subject to management measures	N/A	Schedule VIII

²⁰ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (habitats Directive). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN>

²¹ Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44). <https://legislation.mt/eli/sl/549.44/eng/pdf>

5.2.3 Conservation Status

The 2018 SoER compared the overall conservation status of protected species in Malta over two assessment periods, namely 2001-2006 (published in 2007) and 2007-2012 (published in 2013), as shown in Figure 15.

The 2018 SoER stated that the improvement in habitat conservation status between the two assessment periods are mostly attributable to reduction in knowledge gaps, rather than an actual improvement in status. The report considers only 3% of the changes as authentic status changes, as discussed in the following subsections.

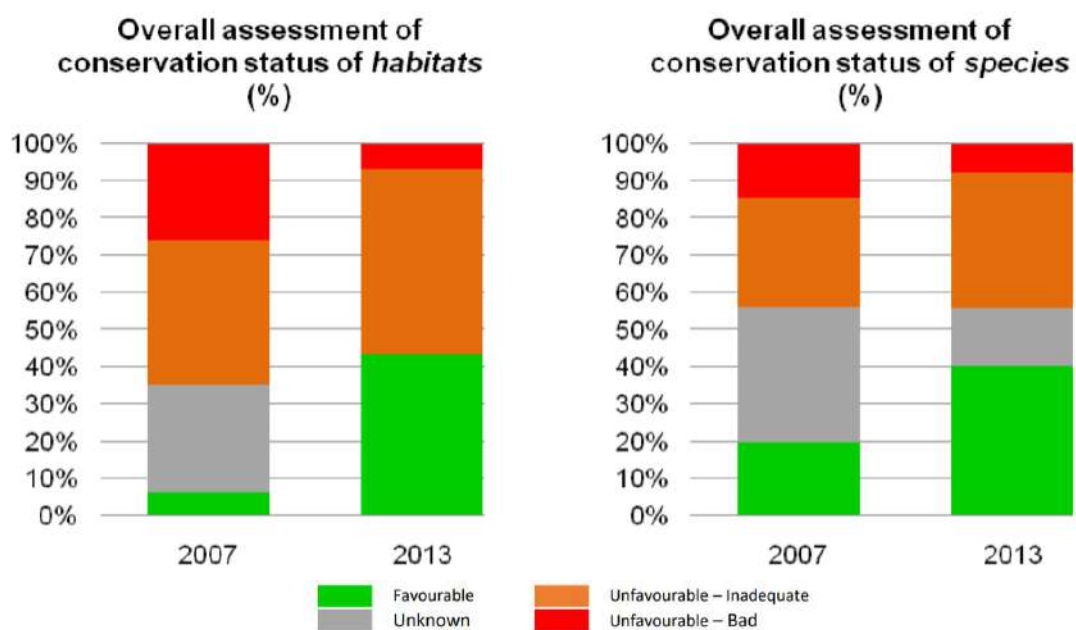


FIGURE 15: CONSERVATION STATUS OF MALTESE HABITATS AND SPECIES⁶

5.2.3.1 Habitat Conservation Status

The conservation status study assessed 31 habitats of community importance in 2007 and 30 in the 2013 exercise. The 2018 SoER classified the conservation status of each of the habitats as unknown, favourable, unfavourable: inadequate and unfavourable: bad (refer to Figure 16). The study revealed an increase in terrestrial sites with favourable conservation statuses from 6% in 2007 to 43% in 2013. This equates to an increase in favourable habitats from 1 to 9. There was an additional 15% reduction in habitats in bad/inadequate status (from 20 to 17 sites).⁶

Knowledge about the status of the marine environment improved notably between 2007 and 2013. In 2007, the conservation status study showed that only one habitat was in good status, while the statuses of the remaining sites were unknown. In 2013, all statuses indicated that protected marine sites had a favourable status, with none remaining unknown.

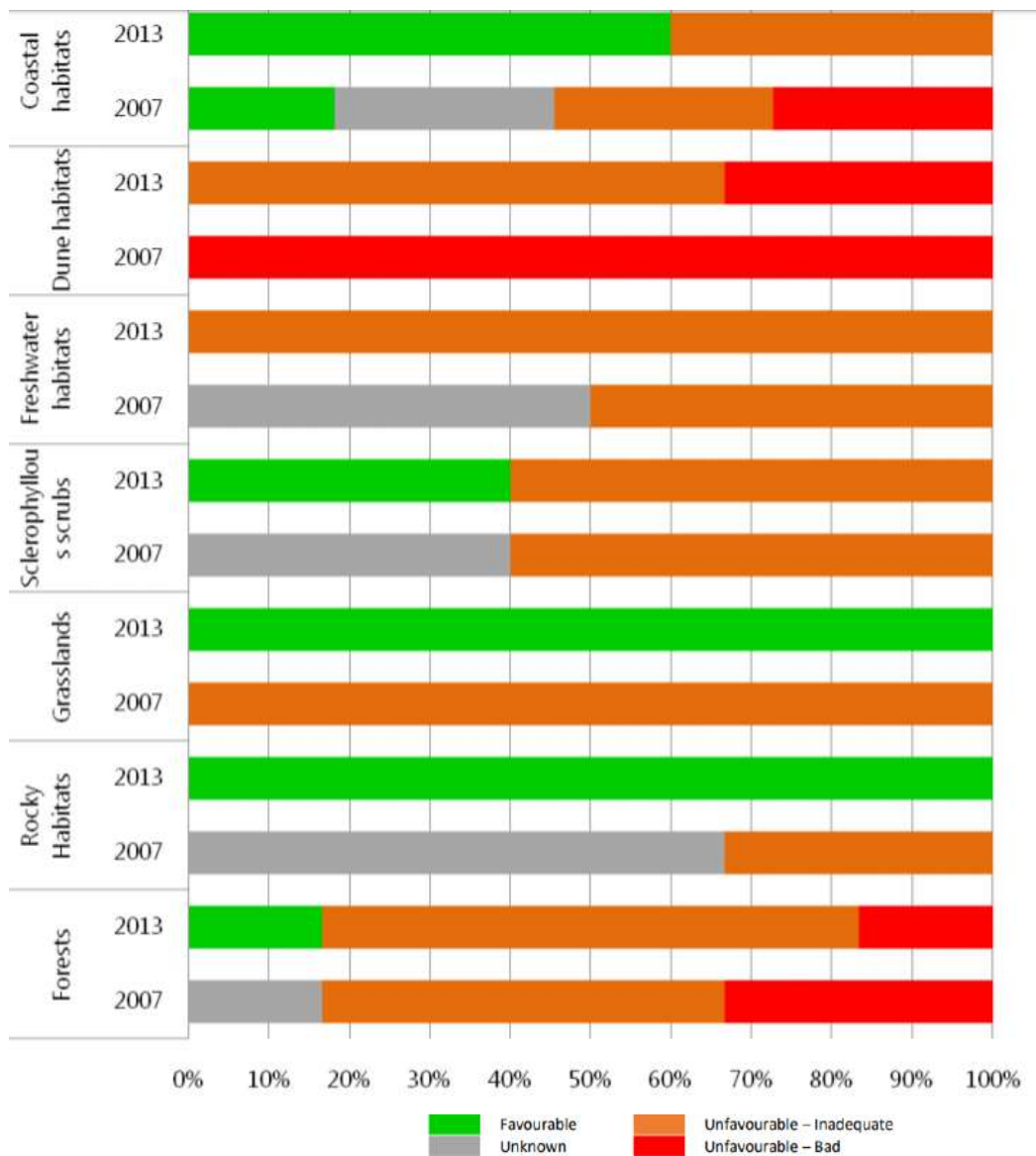


FIGURE 16: HABITAT CONSERVATION STATUS GROUPED BY TYPE⁶

5.2.3.2 Species Conservation Status

The 2018 SoER also assessed species of community importance (55 species in 2007 and 52 species in 2013). The report highlights a variety of important conclusions regarding the conservation status of the species and habitats (vide Figure 17). The most prominent being the highlights increase in species in favourable conservation status from 20% in 2007 to 40% in 2013.

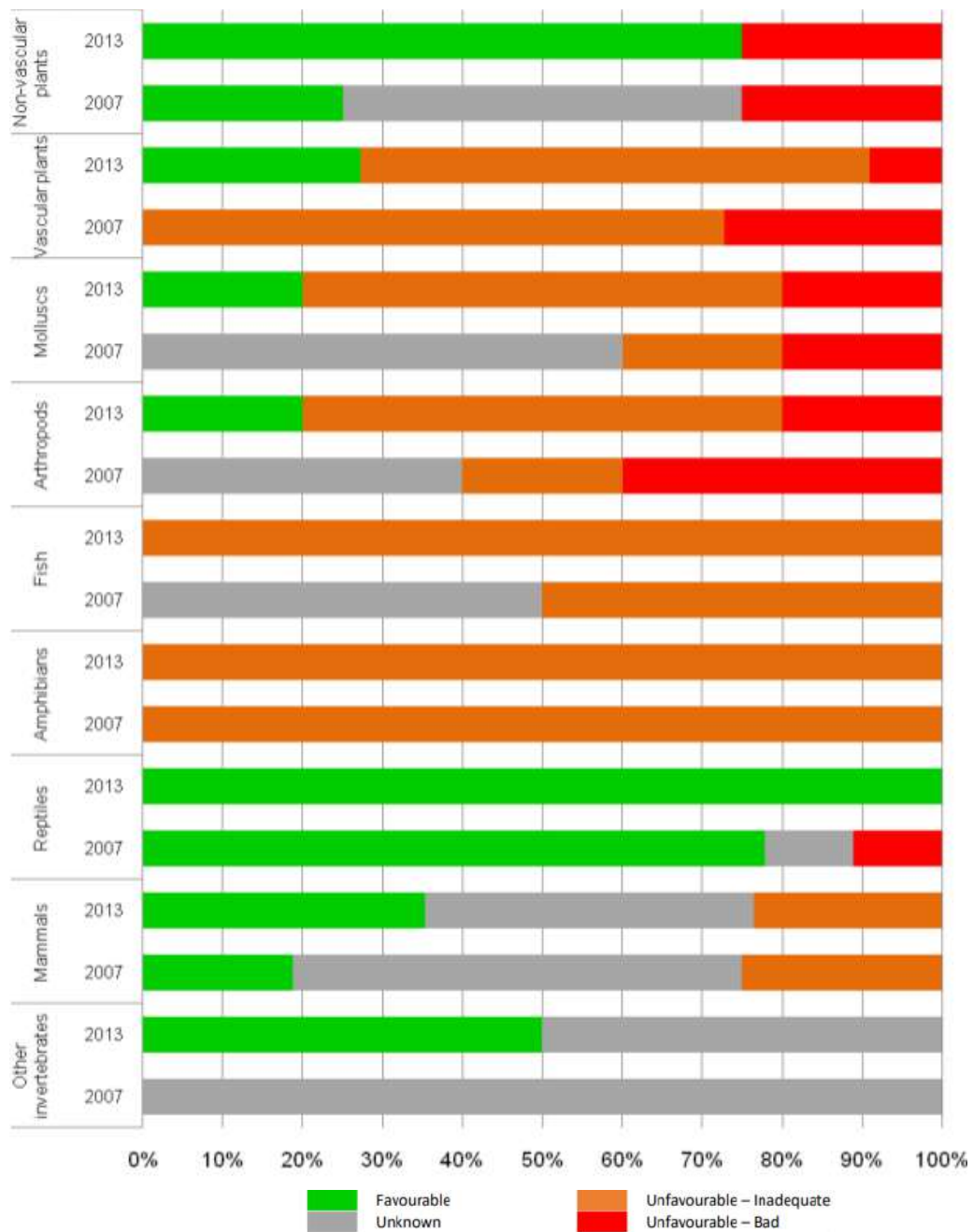


FIGURE 17: SPECIES CONSERVATION STATUS GROUPED BY TAXONOMY⁶

Around 35% of the protected species showed a change in conservation status between the two assessment periods; however, this change is mostly attributable to an increase in knowledge or change in thresholds. The report only considers 4% of these changes to be genuine, such as the improvement of the status of *Brachytrupes megacephalus* (subterranean cricket) and *Pseudoseriscius cameroni* (endemic tenebrionid beetle). The assessment considers 15% of the protected species to be unknown, the majority of which are marine. The percentage of those species with unfavourable status remained the same in the two periods (44%). In contrast, the percentage of species in bad status decreased from 15% in 2007 to 8% in 2013. The study classified the remaining 7% to be of unfavourable inadequate status.⁶

5.2.3.3 Pressures and Threats to Conservation Status

The 2018 SoER report highlights the pressures and threats to Malta’s biodiversity and their frequency of occurrence, as presented in Figure 18 and Figure 19.

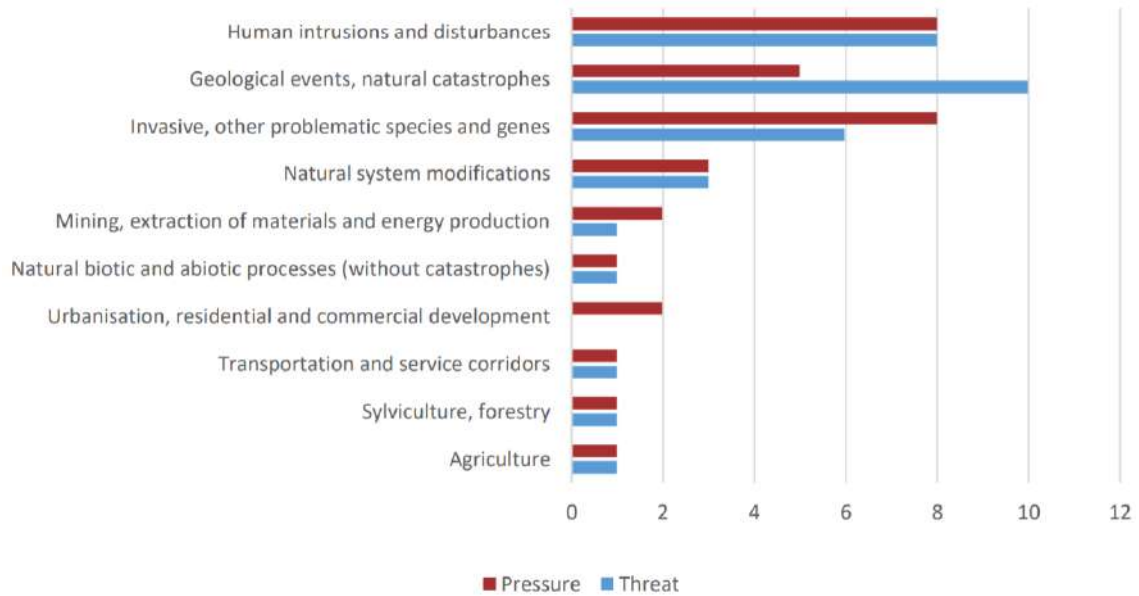


FIGURE 18: FREQUENCY OF PRESSURES AND THREATS TO MALTA’S HABITATS⁶

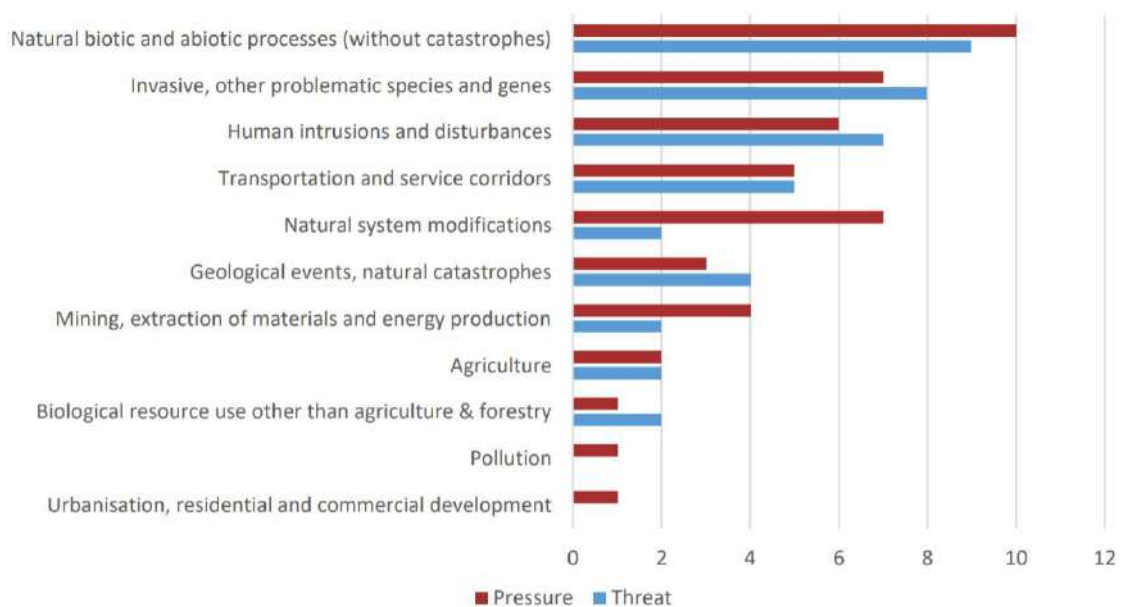


FIGURE 19: FREQUENCY OF PRESSURES AND THREATS TO MALTA’S SPECIES⁶

Pressures on the Maltese marine environment are investigated through existing national monitoring programmes. In line with MSFD and WFD requirements, relevant parameters are measured and monitored every few years to determine the ecological status of the water bodies. Relevant MSFD parameters are covered by the following descriptors:

- Biodiversity (Descriptor 1)
- Non-indigenous species (Descriptor 2)
- Commercial fish species (Descriptor 3)
- Food webs (Descriptor 4)
- Seafloor integrity (Descriptor 6)
- Contaminants in seafood (Descriptor 9)
- Marine litter (Descriptor 10)²²

The results from the last MSFD cycle are shown Figure 20 to Figure 23.²³ The results show that Maltese waters are in good status for biodiversity, seafloor integrity, and marine litter, but in not good status for non-indigenous species and contaminants in seafood. Descriptors 3 and 4 were not assessed as part of that cycle.

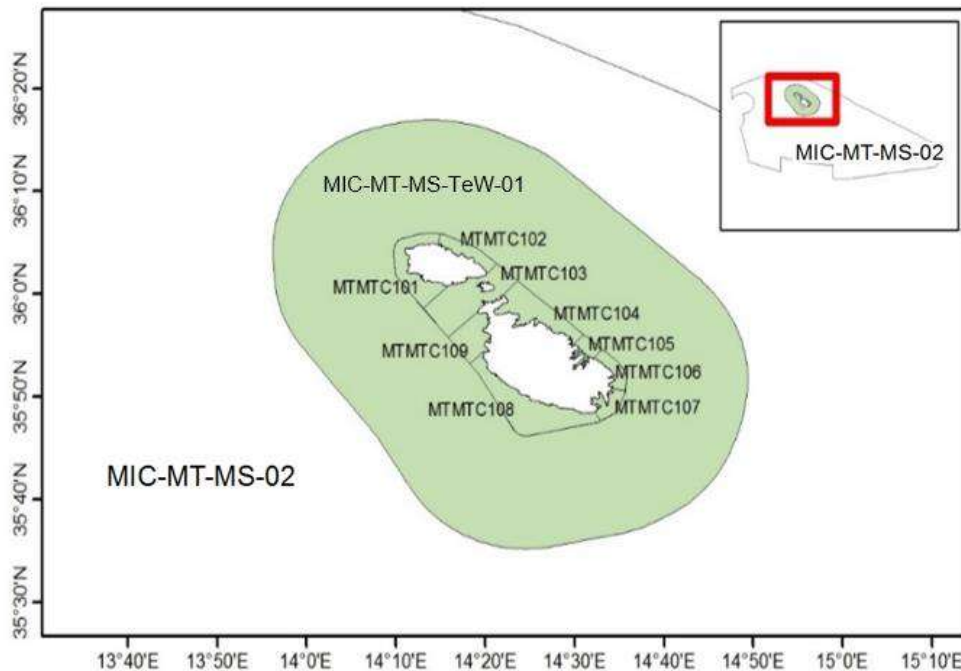


FIGURE 20: ENVIRONMENTAL STATUS FOR D1 AND D6 (GREEN: GOOD STATUS; PINK: NOT GOOD)

²² Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0056&from=EN>

²³ Borja, A., J. Franco, J.M. Garmendia, J. Larreta, I. Menchaca, Y. Sagarmínaga, Y. Schembri, O. Solaun, A. Uriarte, M.C. Uyarra, 2019. *Assessment of environmental status of Malta's Marine Waters*. As per Tender for the Implementation and Updating of Marine Monitoring Programmes, Assessment of Environmental Status and Development of a Marine Database System. 70 pp. https://era.org.mt/wp-content/uploads/2020/08/Final-Monitoring-Report_CT3031_2016.pdf

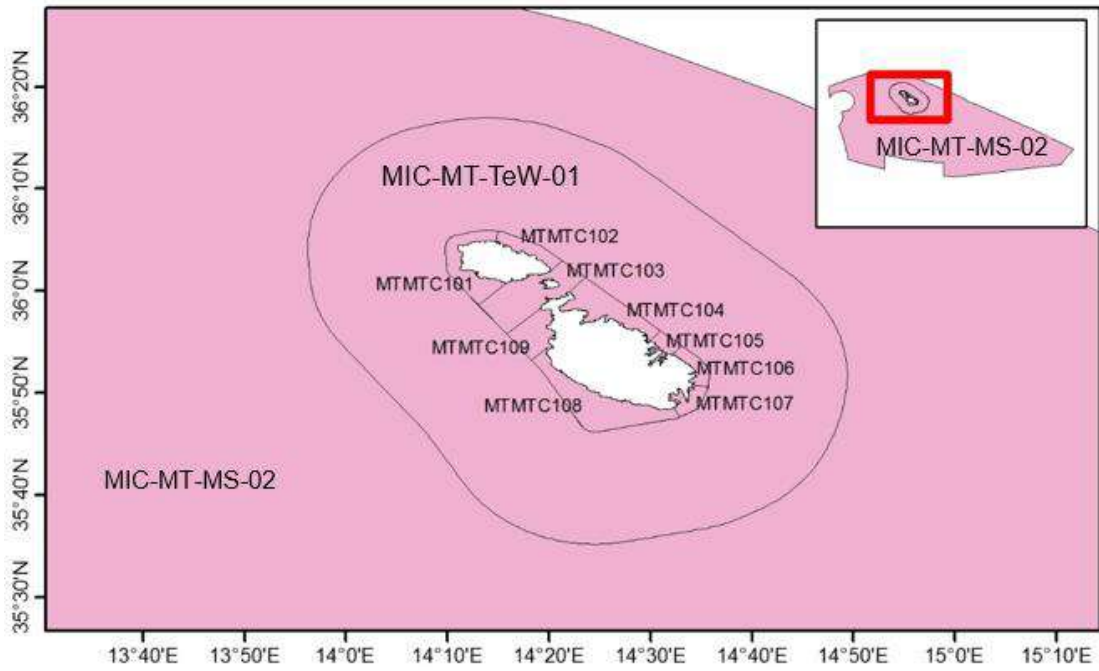


FIGURE 21: ENVIRONMENTAL STATUS FOR D2 (GREEN: GOOD STATUS; PINK: NOT GOOD)

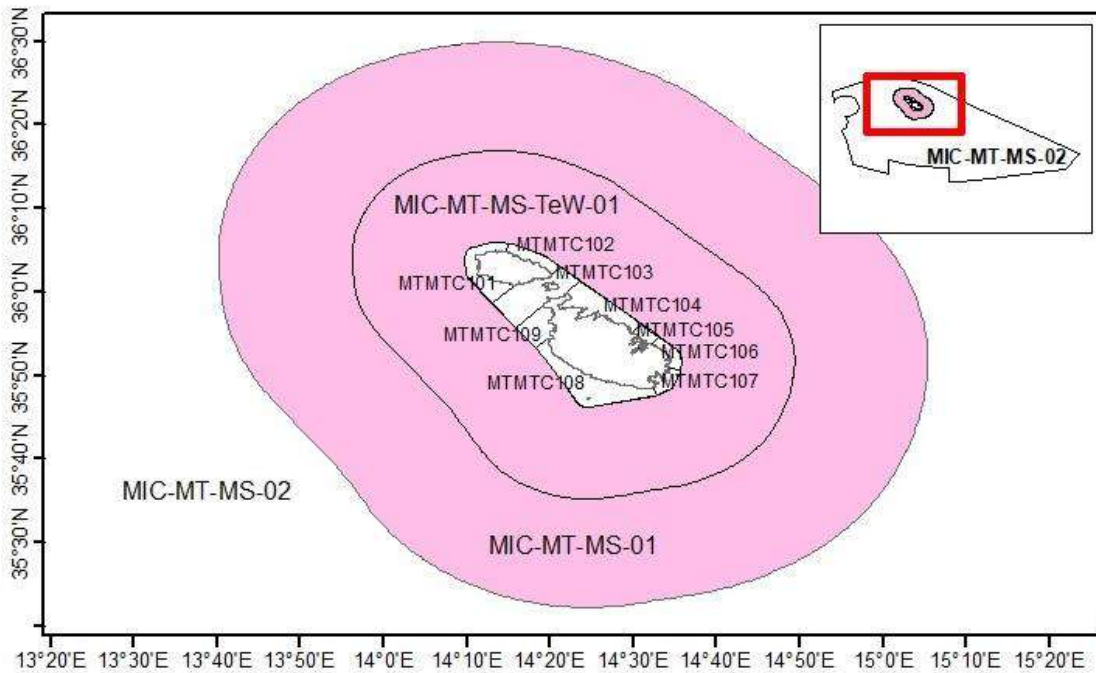


FIGURE 22: ENVIRONMENTAL STATUS FOR D9 (GREEN: GOOD STATUS; PINK: NOT GOOD)

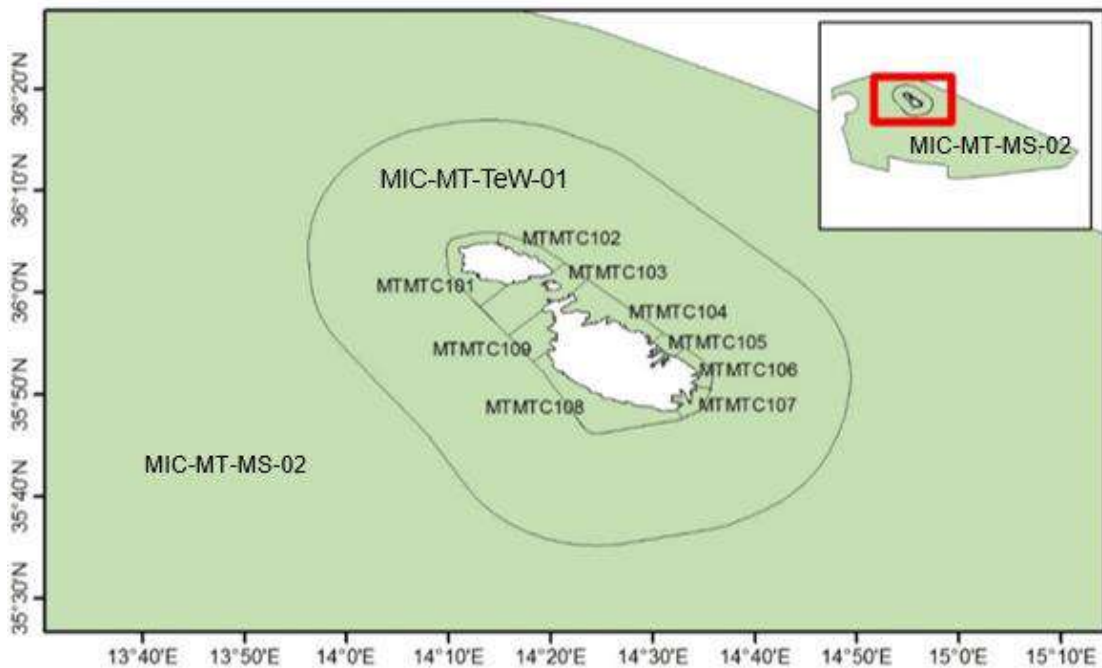


FIGURE 23: ENVIRONMENTAL STATUS FOR D10 (GREEN: GOOD STATUS; PINK: NOT GOOD)

Invasive alien species (IAS) represent a serious pressure and threat to Malta's biodiversity. The introduction of IAS threatens our biodiversity primarily because of the subsequent decrease in biodiversity which occurs, even if the number of species increases overall. The function of the ecosystem is inhibited by the presence of IAS on different levels (sometimes more than one), namely through:

- Competing for the same limited resources
- Predation
- Spreading diseases and parasites
- Cross-breeding with native species in the wild
- Change the food chain structure, thus destabilising the ecosystem

5.2.4 Other Habitats

The Maltese terrestrial and marine habitats are important constituents of our natural heritage, even if not protected by national or international legislation. The ecological and environmental conservation status assessment is carried out in line with the relevant directives, which in turn designate the terrestrial and marine habitats. Nevertheless, the ecological and environmental health of habitats such as valleys and watercourses are also important. In fact, the ERA has designated many valleys and watercourses as important features in our national heritage as AEIs and SSIs. The habitats are therefore protected in accordance with various governmental notices in Maltese legislation.

5.2.5 Other Environmental Factors

The health of an ecosystem is dependent on both the biological (in terms of ecological relationships, biodiversity, presence of alien species, etc.) and environmental (in terms of chemical pollutants, physical functionality, etc.) factors of

the area under study. For example, increases in chemical pollutants are likely to affect the ecological conservation status of inland waters, transitional waters and coastal waters. This SEA considers the biological, physical and chemical characteristics of the habitats.

5.3 LAND USES AND LANDSCAPE

5.3.1 Land Uses

According to land cover statistics presented by Eurostat in 2018²⁴, the Maltese Islands comprised of 16.9% woodland and shrubland, 28.7% cropland, 18.5% grassland, 8.4% water bodies and 27.5% artificial. When compared to other EU countries, Malta has the highest percentage share of artificial land cover. This percentage is further subdivided between built-up artificial areas, which comprise 17.9% of the total national footprint, and 9.6% for non-built up artificial areas.

Agricultural practices dominate the rural areas of the Maltese Islands, accounting for 51.3% of the total land area of the Maltese Islands. In 2020, the total UAA in MALTA amounted to 10,730 hectares. A total of 3,252 hectares or 30.3 per cent of the entire UAA, were found to be situated in the Western district. This was followed by the Northern and Gozo and Comino districts with 2,541 (23.7 per cent) and 2,449 hectares

²⁵.

Woodland cover across the Maltese islands accounts for less than 5% of the land area.⁶ In recent years, there has been a collaborative effort to increase the number of trees across the Maltese Islands. Between the period of 2008 and 2015 the Ministry for Sustainable Development, the Environment and Climate Change, Foresta 2000, Nature Trust Malta and the GAIA Foundation planted a total of 66,722 trees.⁶ Infrastructure Malta have stated that in 2021 alone, they planted 22,162 trees.²⁶

A variety of non-dwelling land uses comprise the built-up environment, apart from dwellings. The 2018 SoER also highlights that between the years of 2008 and 2015, the most dominant type of new development applications were related to environmental leisure (30%); environmental leisure spaces comprise nature parks, afforestation sites and informal recreation spaces. This value was followed by office (13%), warehousing (13%) and leisure development (10%); of which 39%, 9%, 30% and 56% respectively were outside the designated development zone (ODZ).⁶

The most dominant approved new non-dwelling land uses along the urban coasts are cultural (18.8%), warehousing (17.7%) and leisure developments (13.5%). This contrasts

²⁴ Eurostat, 20-18. Land cover in EU Member States. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Land_cover_statistics#Land_cover_in_the_EU_Member_States

²⁵ NSO, Census of Agriculture 2020, News Release 015/2022, 1 February 2022
https://nso.gov.mt/en/News_Releases/Documents/2022/02/News2022_015.pdf

²⁶ Times of Malta (2022). Infrastructure Malta planted 22,162 trees last year – minister.
<https://timesofmalta.com/articles/view/infrastructure-malta-planted-22162-trees-last-year-minister.930040>

to the rural coastlines, which are mainly characterised by environmental leisure activity applications (91.5% of approved developments). Table 9 shows the total approved floor space by sector between 2008 and 2015, with educational leisure occupying the largest floor space, followed by the office sector, warehousing, leisure, retail, industrial sector, other sectors, tourism and education.⁶

TABLE 9: TOTAL APPROVED FLOOR SPACE BY SECTOR BETWEEN 2008 AND 2015

SECTOR	FLOOR SPACE (SQ.M)
Education	125,498
Environmental leisure	912,997
Food and drink	90,123
Health	47,497
Industrial	187,376
Leisure	311,276
Office	408,570
Other	187,376
Retail	256,605
Tourism	136,178
Warehousing	407,471
Total	3,070,967

Over the period from 2008 to 2015, MEPA granted a substantial number of permits related to industry, retail activity and office developments. Figure 24 depicts the total approved floor space area covered by such permits for these three non-dwelling units during the aforementioned period. The total industrial space area fluctuated substantially throughout the review period, peaking in 2008, 2012 and again in 2014. Retail floor space was relatively stable, with slight peaks in 2010 and 2014. The office space area fluctuated sharply between 2008 and 2015, peaking in 2011 and 2014, and dipping in 2009 and 2013.

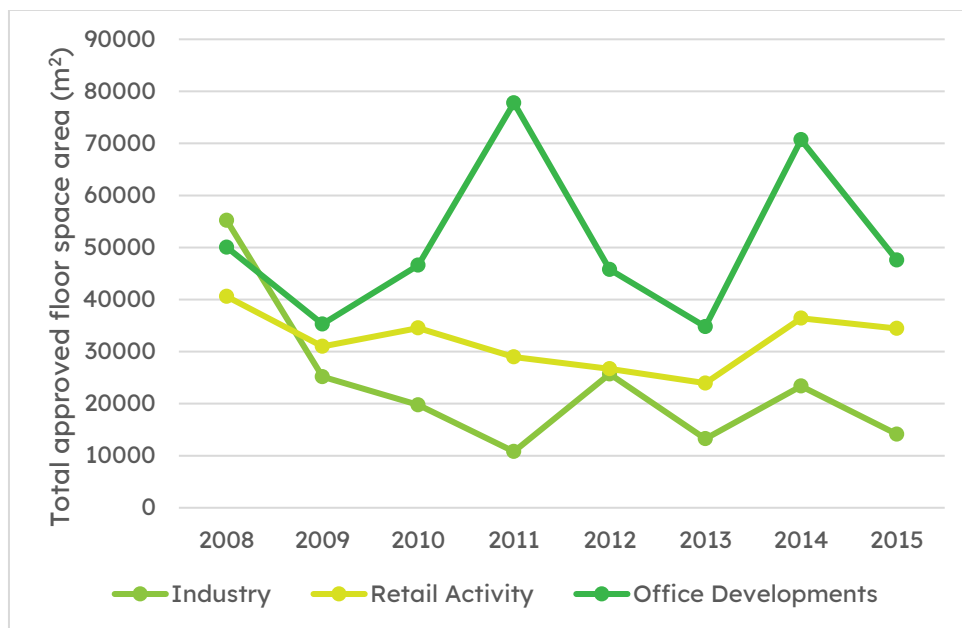


FIGURE 24: TOTAL APPROVED FLOOR SPACE AREA BY LOCAL PLAN FOR INDUSTRY, RETAIL ACTIVITY AND OFFICE DEVELOPMENTS

5.3.2 Sea Uses

The Maltese islands have a strong strategic position in the centre of the Mediterranean Sea. Located 93 km from the south of Sicily and 290 km from the north of Africa, Malta has historically been a country with significant historic maritime importance. In fact, the earliest shipyard facility in the Maltese islands was constructed by the Order of St John back to the early 1500s to boost the country's maritime prominence. Once the British conquered the Maltese Islands, the archipelago was used as a maritime hub for the British empire for about 150 years. Since gaining its independence in 1964, Malta has continued to realise its maritime potential by maintaining well-equipped ports, adept seamen and boosting its role in international trade.

Malta's marine waters are designated as follows:

- Malta's area of Internal waters is approximately 199 km²
- Malta's area of Territorial waters is approximately 3,830 km²
- Malta's area of Contiguous Zone is approximately 10,762 km².
- Malta's area of the Continental Shelf is approximately 75,779 km².
- Malta has not yet declared an Exclusive Economic Zone.
- Area of the Fisheries Management Conservation Zone (FMCZ) which extends up to 25 nm is approximately 11,480 km².

Malta has not established a maritime spatial plan.²⁷ Maritime uses around the Maltese Islands are mapped in the 2ND WATER CATCHMENT MANAGEMENT PLAN, as

²⁷ European MSP Platform (2022). *Malta: Which Maritime Spatial Plans exist?* https://maritime-spatial-planning.ec.europa.eu/sites/default/files/download/malta_february_2022_0.pdf.

reproduced in Figure 25.²⁸ Such uses include aquaculture zones, swimming zones, trawling areas, bunkering areas, and a spoil dump ground. Cables along the seabed are mapped in Figure 26, as extracted from the EMODnet platform.²⁹

²⁸ Environment & Resources Authority (2015). *The 2nd Water Catchment Management Plan for the Malta Water Catchment District 2015 – 2021*.

²⁹ EMODnet (2022). *Human activities*. <https://www.emodnet-humanactivities.eu/view-data.php>.

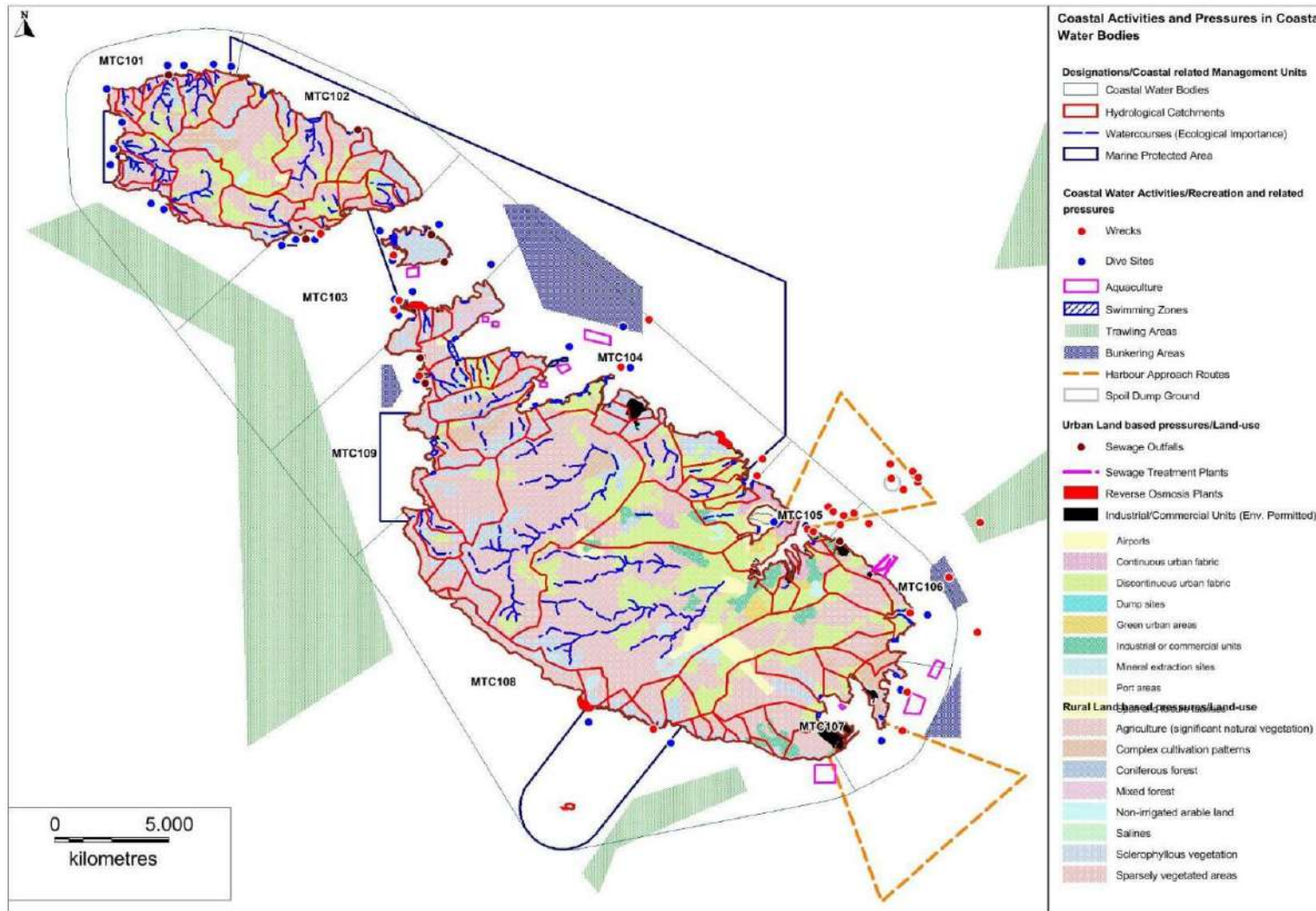


FIGURE 25: HUMAN PRESSURES IN MALTESE WATERS²⁸

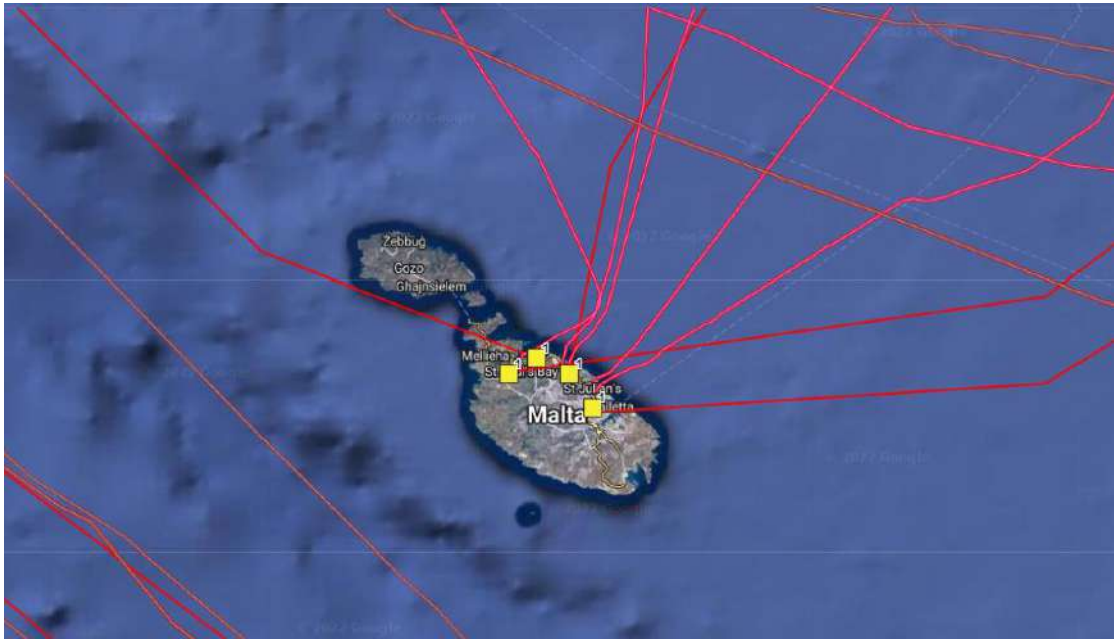


FIGURE 26: CABLES (RED) AND LANDING SITES (YELLOW) AROUND MALTA²⁷

Figure 27 and Figure 28 describe the size of the Maltese fleet, expressed in gross tonnage, and the type of vessels in the fleet, respectively. There has been a relatively steady increase in the gross tonnage of the Maltese fleet since 1987, with the 2000-2004 and 2011-2012 showing a decrease in the fleet. The total number of vessels registered in Malta in 2019 amounted to 8,594 (gross tonnage of 82.93 million). Malta is the largest register of vessels in Europe, and the sixth largest in terms of gross tonnage.³⁰

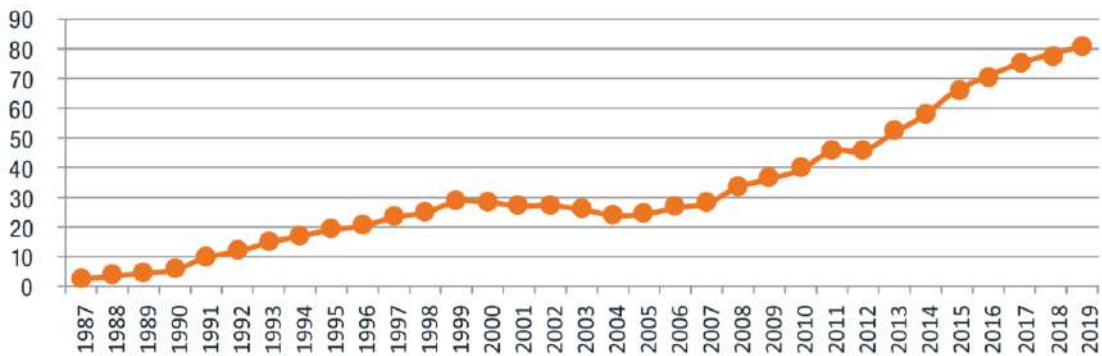


FIGURE 27: GROSS TONNAGE OF REGISTERED VESSELS IN THE MALTESE FLEET (1987-2019)³⁰

³⁰ TM (2020). *Annual Report 2019*. <https://www.transport.gov.mt/0011-Transport-Malta-Annual-Report-2019-web.pdf-f5200>.

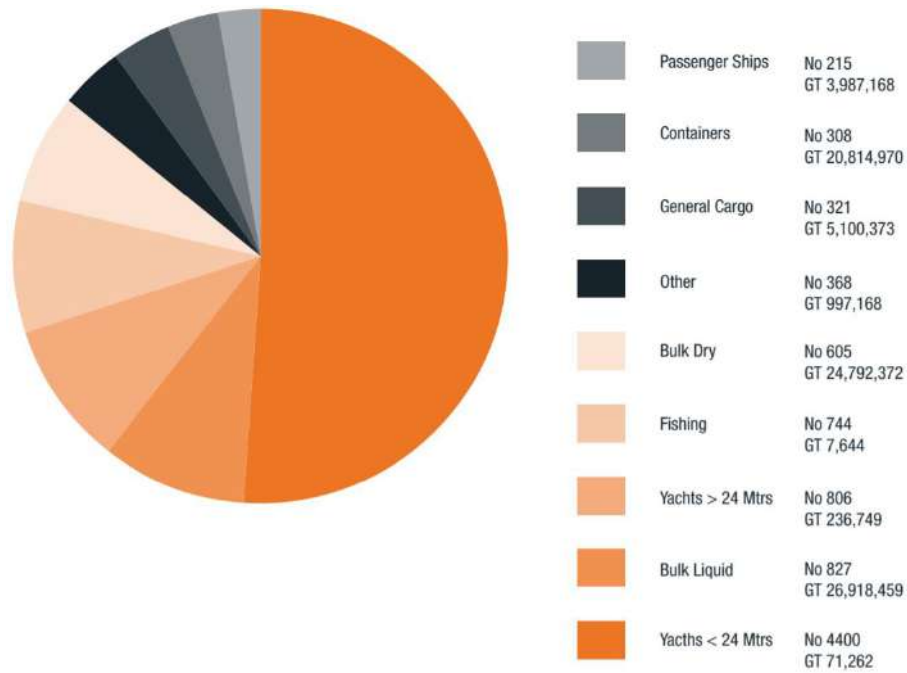


FIGURE 28: VESSELS BY TYPE REGISTERED IN MALTESE FLEET (2018)³⁰

Figure 29 shows the density of marine vessels for 2020, extracted from the EMODnet platform.²⁹ The map indicates that the highest vessel density is closest to the shore, in the bunkering areas and in the harbour approach area off the east coast of Malta.

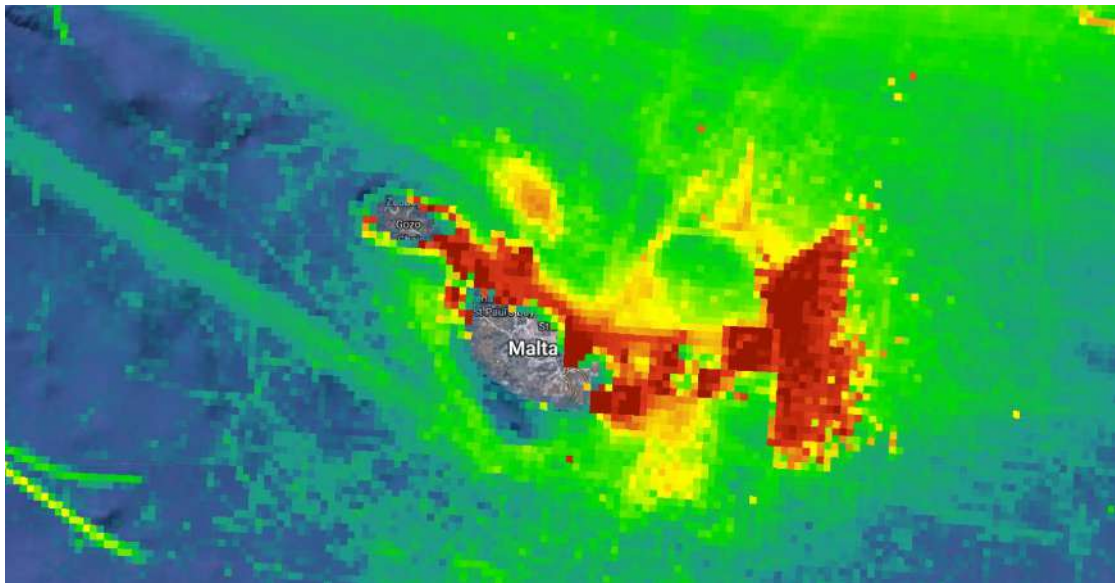


FIGURE 29: VESSEL DENSITY AROUND MALTA (2022)³⁰

5.3.3 Landscape

The EUROPEAN LANDSCAPE CONVENTION defines landscape as “*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or*

human factors".³¹ Landscape does not only comprise of visual aspects of the environment, but also includes the character of an area perceived through the remaining four senses. For example, the aromas of local flora and the sound/smell of the sea also contribute to the beauty of a location. Studies which assess the impact of a feature/development on landscape rely heavily on visual aspects.

As described in the LANDSCAPE ASSESSMENT OF THE MALTESE ISLANDS (LAMI), the quality of a landscape and its uniqueness aid in:

- Bestowing a sense of place and identity by distinguishing the area from all others and rendering the area special and important;
- Inspiring relaxation and improving the perceivers' state-of-mind;
- Promoting enjoyable experiences with recreational, inspiration and educational potential by instilling a sense of awe and wonder; and
- Increasing employment through the tourism industry.³²

The Maltese Islands are comprised of three main inhabited islands and numerous small uninhabited ones which lie in the centre of the Mediterranean. Malta's natural landscape is characterised by terraced fields, dry vegetation, rock and limestone, largely due to the long hours of sunshine throughout the year. Karstic rock formations with nearby water bodies, Mediterranean flora and fauna prevail in the natural areas. The local landscape also includes many interspersed vantage points providing panoramic views, vertical cliffs and a varied scenery, along with numerous valleys and waterways.

High-density development dominates the urban landscape, interspersed with a variety of historical features and occasional pockets of landscaped gardens. Due to Malta's topography, the sea is visible from the majority of areas of the Islands, which has an overall positive effect on the local landscape.

Contributors to the Maltese natural landscape are listed hereunder:

1. **Geomorphology:** Low bathymetric depth along the North East coast of Malta and in many of the bays introduces shades of colour to the water body; and offshore islands tend to greatly enhance the quality of a coastal landscape, especially when these islands lie within the visibility radius of an observation point.
2. **Climate:** Typical of the central Mediterranean, as the year is split into two main seasons, namely hot dry summers and mild cool winters. The overall mild climate contributes to the aesthetic appeal of the Islands.

³¹ Council of Europe (2002). *European Landscape Convention*. Florence, 20.X.2000.

³² MEPA (2004). *Landscape Assessment Study of the Maltese Islands*.

<https://era.org.mt/en/Documents/LandscapeAssessment-MalteseIslands-MEPA-2004.pdf>

3. **Vegetation:** Natural vegetation with endemic species and scarce woodland areas (less than 0.5% coverage) which have mostly been created or augmented through human intervention.

Landscape sensitivity in the Maltese Islands is characterised into five hierarchical levels with decreasing sensitivity as listed hereunder and mapped in Figure 30.

- Category 1: Area of Very High Landscape Sensitivity (AVHLS)
- Category 2: Area of High Landscape Sensitivity (AHLs)
- Category 3: Area of Significant Landscape Sensitivity (ASLS)
- Category 4: Area of Moderate Landscape Sensitivity (AMLS)
- Category 5: Areas Requiring Landscape Upgrading (ARLU)

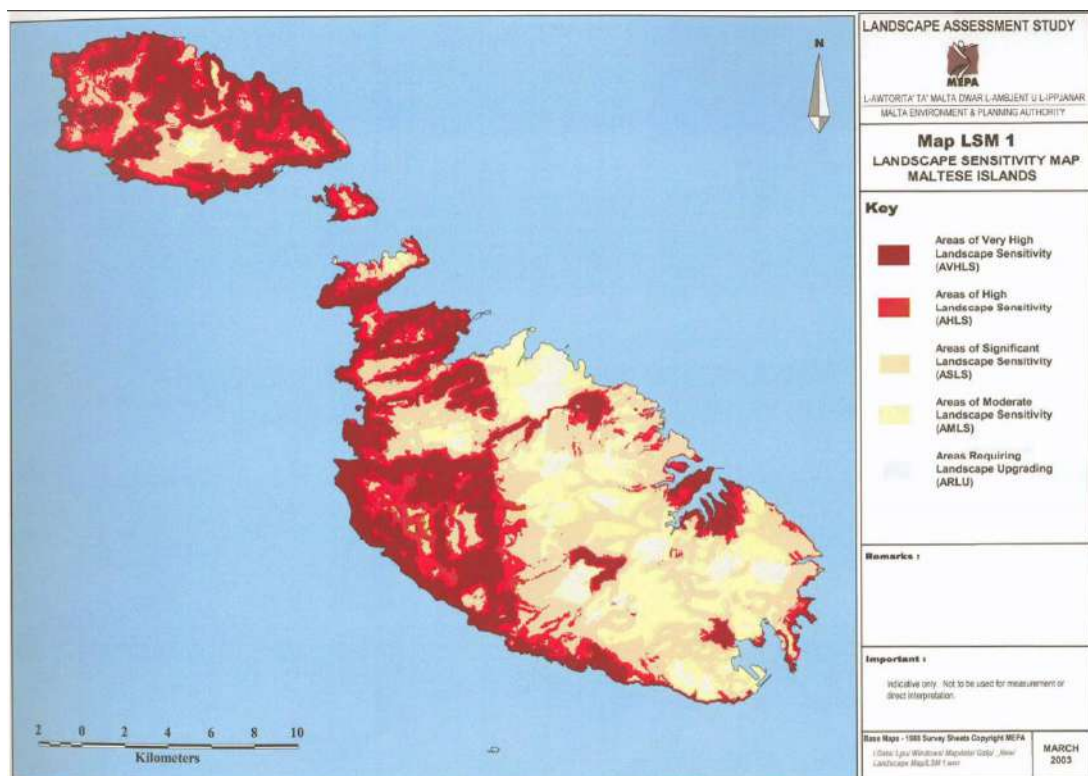


FIGURE 30: LANDSCAPE SENSITIVITY MAP FOR THE MALTESE ISLANDS³²

The Landscape chapter of the 2005 SoER highlights scheduled areas of high landscape value, protected landscape features and protected sites for cultural heritage including sites of archaeological importance & scheduled buildings (Figure 31).³³ A total of 51% of Malta's land area was characterised as being of high or very high landscape sensitivity in the LANDSCAPE ASSESSMENT STUDY of 2004.³⁴ AHLVs, which cover 12% of the Maltese Islands, were scheduled by local legislation between 1996 and 2000.³³ During 2006, the extent of AHLVs increased to 33% covering 106km² of

³³ MEPA, State of the Environment Report 2005. https://era.org.mt/en/Documents/SOER_05.pdf

³⁴ MEPA (2006). LS1: Areas protected for landscape value. <https://era.org.mt/wp-content/uploads/2019/05/LS1ProtectedAreas-LandscapeValue-MEPA-2006.pdf>

the Maltese Islands, equating to almost three times as much as 2000.³⁴ STRUCTURE PLAN FOR THE MALTESE ISLANDS (1990) designated AHLVs as such to protect specific landscape features.

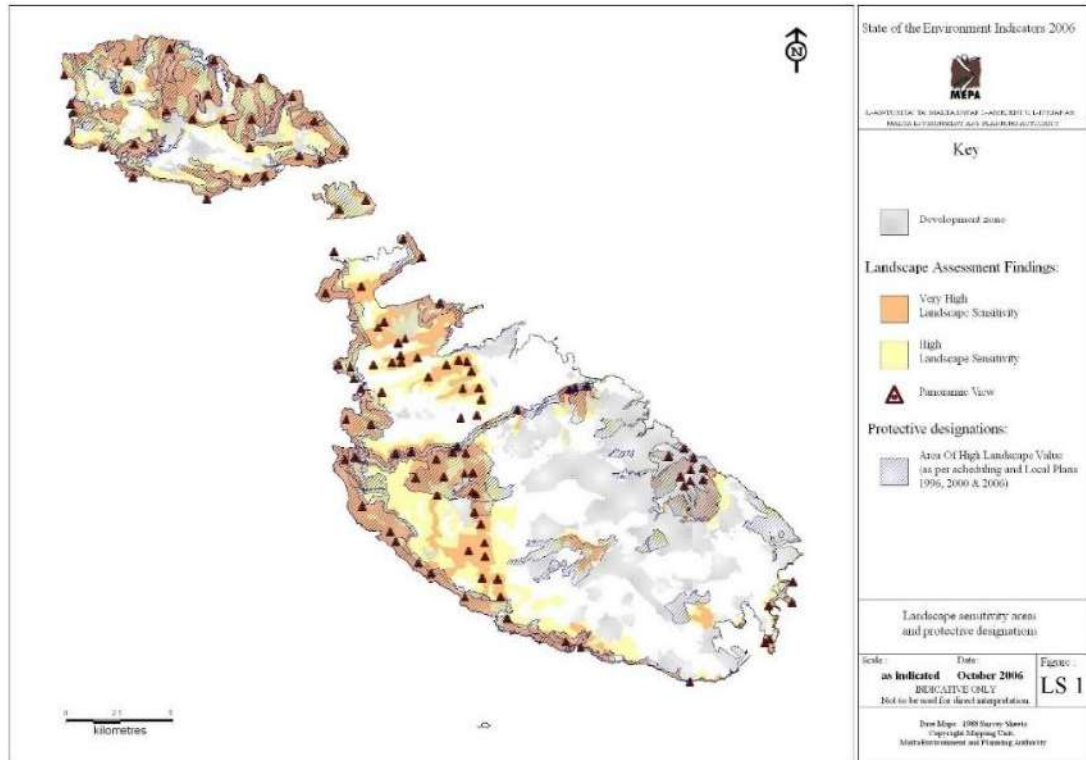


FIGURE 31: LANDSCAPE SENSITIVITY AREAS AND PROTECTIVE DESIGNATIONS³⁴

Threats to the Maltese landscape include the increased take-up of open spaces for urban and coastal development, taller buildings on urban fringes which obstruct views of historic centres, unsustainable agricultural practices and increased vehicular access.

5.4 CULTURAL HERITAGE

Falser (2015) defines cultural heritage as the “*legacy of physical artefacts and intangible attributes of a group or society that is inherited from past generations*”.³⁵ The method used by archaeologists to classify artifacts artefacts or features as “heritage” is not set in stone, but depends on the societal context in which the evaluation is taking place.

In terms of immovable heritage (i.e. buildings/architectural structures), the Superintendence of Cultural Heritage (SCH) launched its National Inventory in 2011. Since then, various features of cultural importance have been published on the

³⁵ Falser, M. (2015). Cultural Heritage as Civilizing Mission. New York: Heidelberg. ISBN 978-3-319-13638-7.

Government Gazette and publicised on the online National Inventory.³⁶ These cultural features are classified as follows:

- Historical, military and archaeological sites (HMAS)
- Historical and archaeological sites (HAS)
- Chapels and niches (CN)
- Scheduled architecture (SA)
- Knights period fortifications (KPF)³⁶

Such features are protected in accordance with local legislation. A total of 2,412 features are currently scheduled, as shown in Figure 32. No new protected features have been added to the inventory since 2014 because the SCH have been occupied with other work, namely related to its participation in EU projects, its monitoring of the increased number of developments in Malta and conversion of the national inventory into spatial data available on a GIS.³⁷

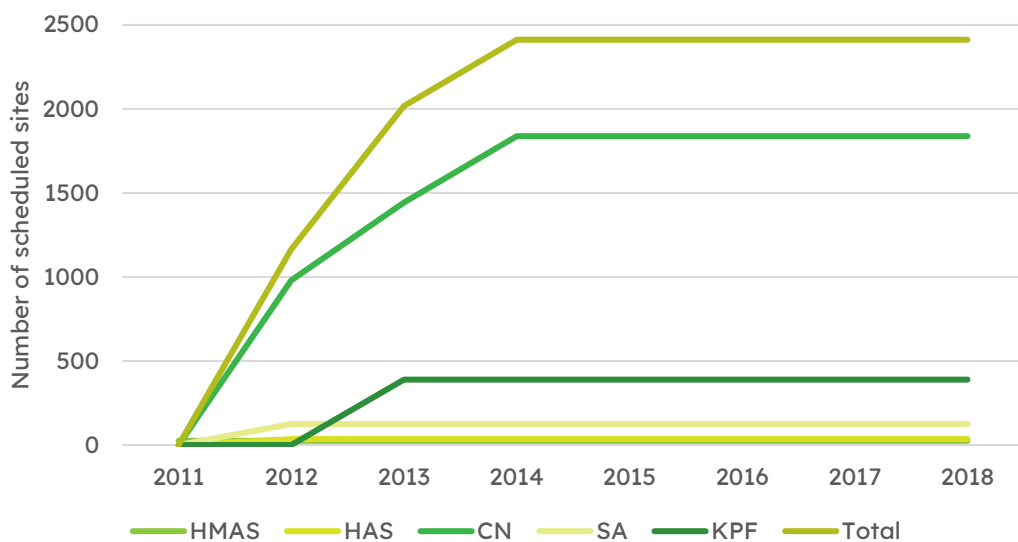


FIGURE 32: NUMBER OF SCHEDULED SITES BY TYPE ON THE NATIONAL INVENTORY³⁸

5.4.1 Marine Archaeology

During the Last Glacial Maximum (LGM) the Maltese Islands were connected directly to Sicily via a land-bridge, as shown in Figure 33. Malta became cut off from

³⁶ Superintendence of Cultural Heritage. *National Inventory*.
<https://culture.gov.mt/en/culturalheritage/Pages/National%20Inventory.aspx>

³⁷ Superintendence of Cultural Heritage. *Annual Reports*.
<https://culture.gov.mt/en/culturalheritage/Pages/AnnualReport.aspx>

³⁸ Annual Report 2014. Superintendence of Cultural Heritage.
<https://culture.gov.mt/en/culturalheritage/Documents/form/SCHAnnualReport2014.pdf>

mainland Europe ca. 14,500 years BP ago when the sea levels rose substantially.^{39, 40} Evidence for this drastic change in the Malta-Sicily Channel is supported by prehistoric shipwrecks off the coast of Pantelleria and a submerged monolith from the Mesolithic period within the channel.^{41,42}

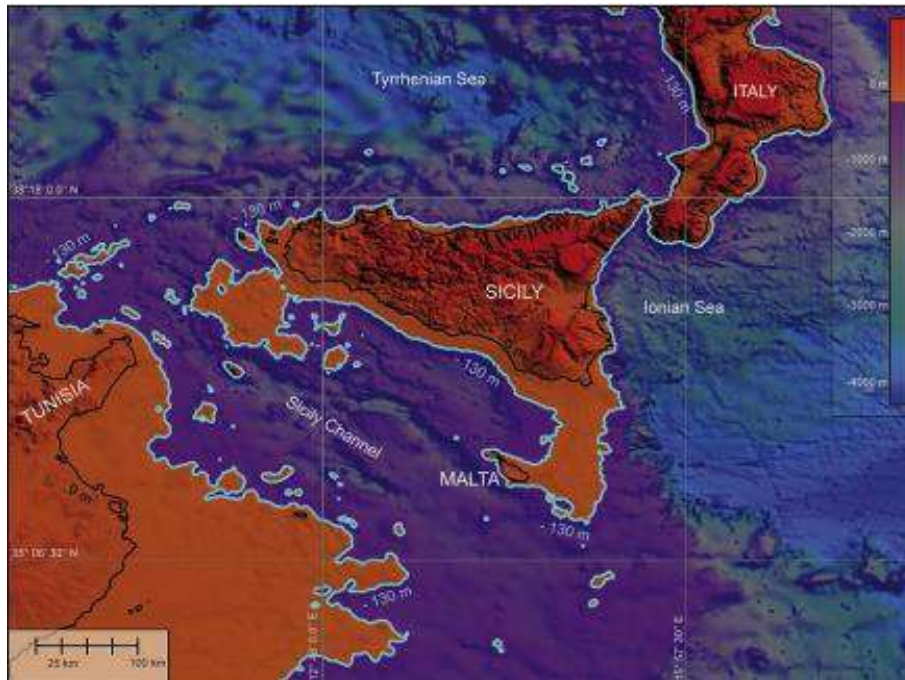


FIGURE 33: LAND BRIDGE BETWEEN SICILY AND MALTA³⁹

Malta is located along an ideal shipping route for vessels crossing the Mediterranean Sea, as demonstrated by the materials found inside shipwrecks in the vicinity of the Maltese Islands. The use of Malta's natural harbours dates back to antiquity, when Diodorus Siculus described their use in the mid-first century BC.

Malta was frequently invaded and colonised by various groups throughout the Middle Ages, including Norman invaders led by Roger I in the early 1000s and Muslim invaders originating from North Africa in the 1800s.⁴³ The invaders used the water surrounding the Maltese Islands and the Malta-Sicily channel as a means of transport

³⁹ Alexander, D., (1988). A review of the physical geography of Malta and its significance for tectonic geomorphology. *Quaternary Science Reviews*, 7(1), pp. 41-53.

⁴⁰ Furlani, S., *et al.*, (2013). Holocene sea level change. *Quaternary International*, 288, pp.146-57.

⁴¹ Abelli, L., *et al.*, (2014). Marine geological and archaeological evidence of a possible pre-Neolithic site in Pantelleria Island, Central Mediterranean Sea. In: Harff, J., Bailey, G., & Lüth, F., (eds.), *Geology and Archaeology: submerged landscapes of the continental shelf*. Geological Society, London, Special Publications 411.

⁴² Lodolo, E., & Ben-Avraham, Z., (2015). A submerged monolith in the Sicilian Channel (central Mediterranean Sea): Evidence for Mesolithic human activity. *Journal of Archaeological Science: Reports*, 3, pp. 398-407.

⁴³ Atauz, A.D., (2004). *Trade, piracy and naval warfare in the central Mediterranean: the maritime history and archaeology of Malta*. Dissertation of Doctor of Philosophy: Texas A&M University.

of goods and services. Such use is evidenced by shipwrecks from this period such as the Contrada Bambina located to the south of Marsala, which contains a bronze pail with an Arabic inscription from the Qur'an.^{44,45}

Malta's use as a maritime hub in the Medieval period is evidenced by the oldest portolan which forms part of the Greenwich Maritime Museum collection. The portolan, which dates to 1456, portrays Malta at the centre of the map, demonstrating Malta's importance in Mediterranean maritime activities at this time (Figure 34).⁴⁶

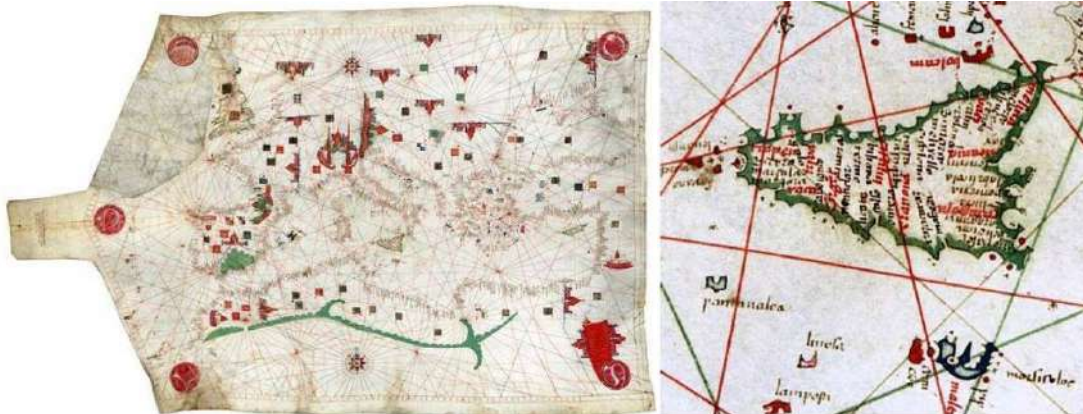


FIGURE 34: PORTOLAN DEPICTS MALTA AND SICILY DRAWN ON VELLUM⁴⁶

Considering that Malta was one of the most intensively bombed areas in the world during World War II, encountering UXOs and other munitions on or within underwater sediments is likely. Disturbance of underwater bombs could possibly detonate such features, particularly if shipwrecks or crashed aircraft are encountered.

5.5 ENERGY AND WATER CONSUMPTION

5.5.1 Electricity Generation

The majority of the electricity generated in Malta is produced from non-renewable energy sources or imported (Figure 35).⁴⁷ In 2020, local power plants accounted for 73.6% of electricity generation, 16.7% was sourced from net imports (Malta-Sicily interconnector) and only 9.7% from local renewable sources.⁴⁷ When compared to the previous year (2019) the quantity electricity generation increased from both power plants and renewable sources increased (2.3% and 20.3% increase respectively).⁴⁷ In

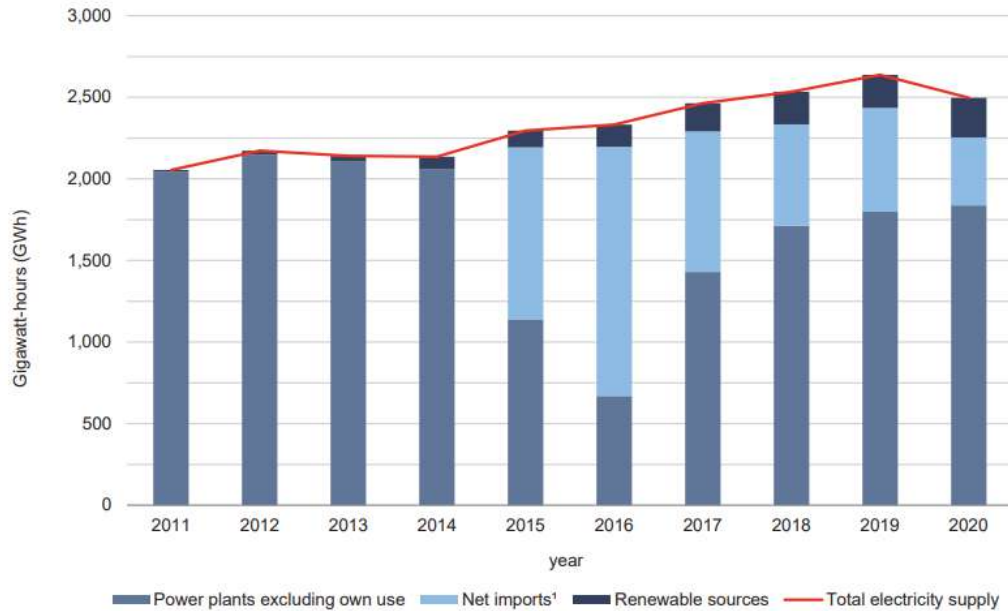
⁴⁴ Bramoullé, D., et al, (2017). Le mobilier céramique dans la Méditerranée des Xth-XIIth siècles. *Annales Islamologiques*, 51, p.191-221, [In French].

⁴⁵ Ashmolean Museum of Art and Archaeology, (2016). *Storms, war and shipwrecks: Treasures from the Sicilian seas*. <https://www.ashmolean.org/sites/default/files/ashmolean/documents/media/stormswarsandshipwrecksteachernotes.pdf>.

⁴⁶ Gambin, T., (2008). The maritime cartography of the Sicily-Malta Channel, In: *Malta and Sicily: Miscellaneous Research Projects*, Bonanno, A., (Ed.). KASA.

⁴⁷ NSO (2021). *News Release: Electricity supply: 2016 – 2020*. https://nso.gov.mt/en/News_Releases/Documents/2021/10/News2021_181.pdf

contrast, the amount of electricity imported through the interconnector in 2020 decreased by 36.1% when compared to 2019.⁴⁷



¹ net imports = imports - exports

FIGURE 35: TOTAL ELECTRICITY SUPPLY IN MALTA BY TYPE⁴⁷

Solar panels are the main source of renewable energy generation within the Maltese islands. In 2020 there were a total of 29,339 PV installations across the Maltese islands, accounting for the generation of 184,563.7 kWp.⁴⁸ This is an increase of 19.6% when compared to 2019, continuing the steady trend of increasing numbers of installations in the recent years (Figure 36).⁴⁸ The majority of these PV installations are from the domestic sector that amount to (93.6%), with 5.5% in the commercial sector and 0.9% in the public sector (Figure 37).⁴⁸

⁴⁸ NSO (2021). *News Release: Renewable energy from photovoltaic panels (PVs): 2020*

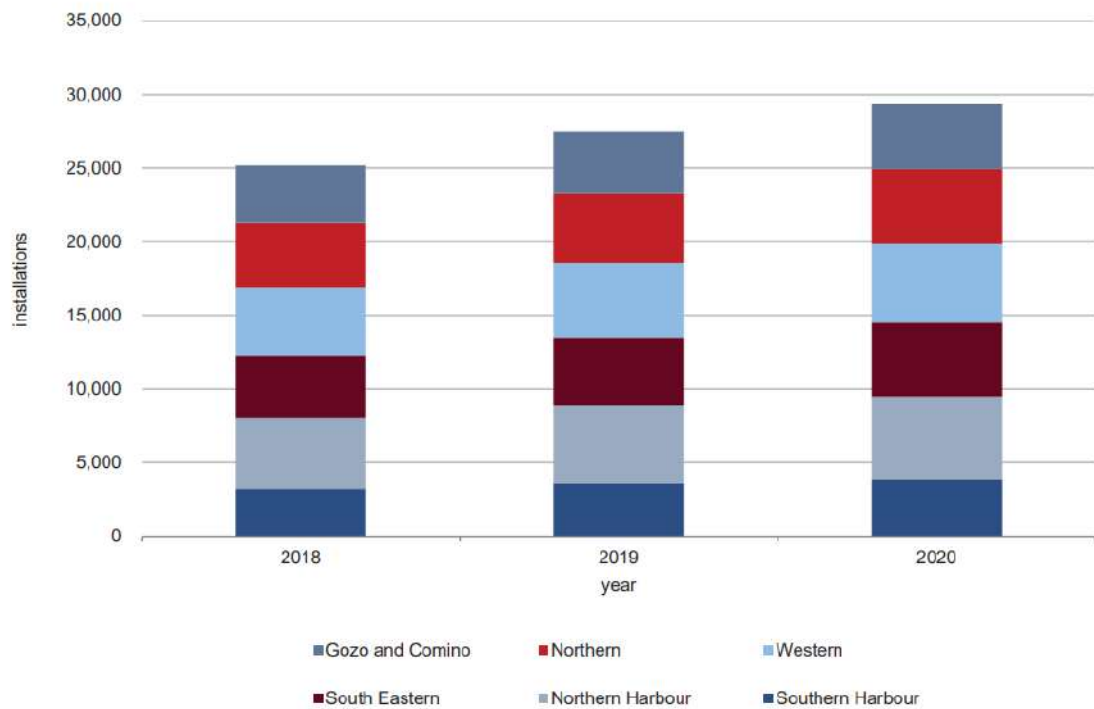


FIGURE 36: NUMBER OF PV PANEL INSTALLATIONS BY DISTRICT BETWEEN 2018 AND 2020⁴⁸

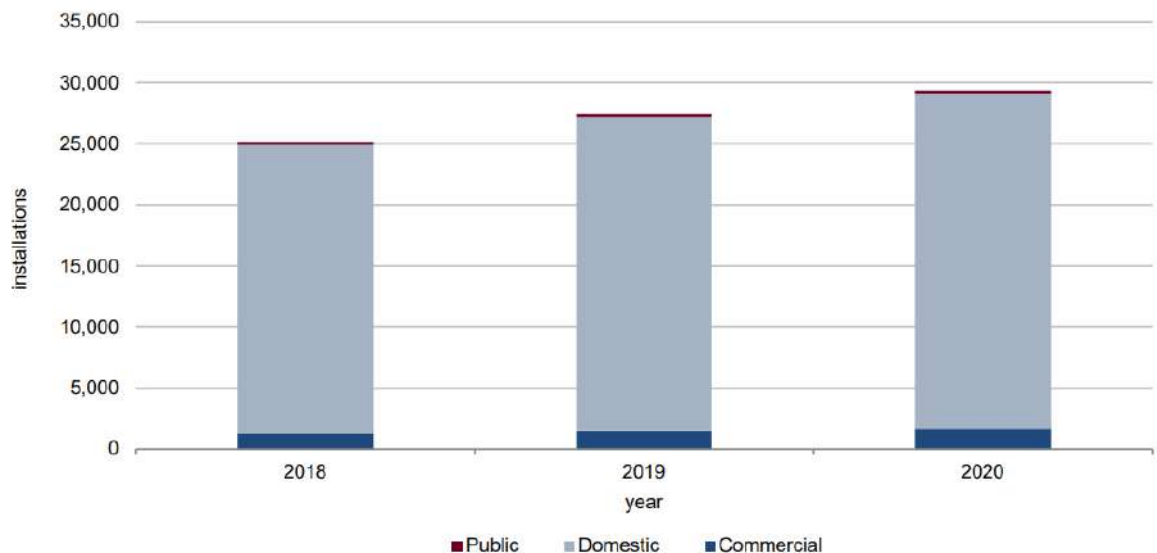


FIGURE 37: NUMBER OF PV PANEL INSTALLATIONS BY SECTOR BETWEEN 2018 AND 2020⁴⁸

The NSO report indicates that there are regional discrepancies in the number of PV panels per capita and electricity output. Gozo and Comino have the highest number of panels per 1000 people, with most areas having more than 119 domestic installations per 1000 population, (Figure 36) ⁴⁸ which is followed by the Western and South Eastern districts at 80 and 63 installations respectively. The lowest ratio was registered in the Northern Harbour district, with 31 installations per 1,000 population (Figure 39).⁴⁸

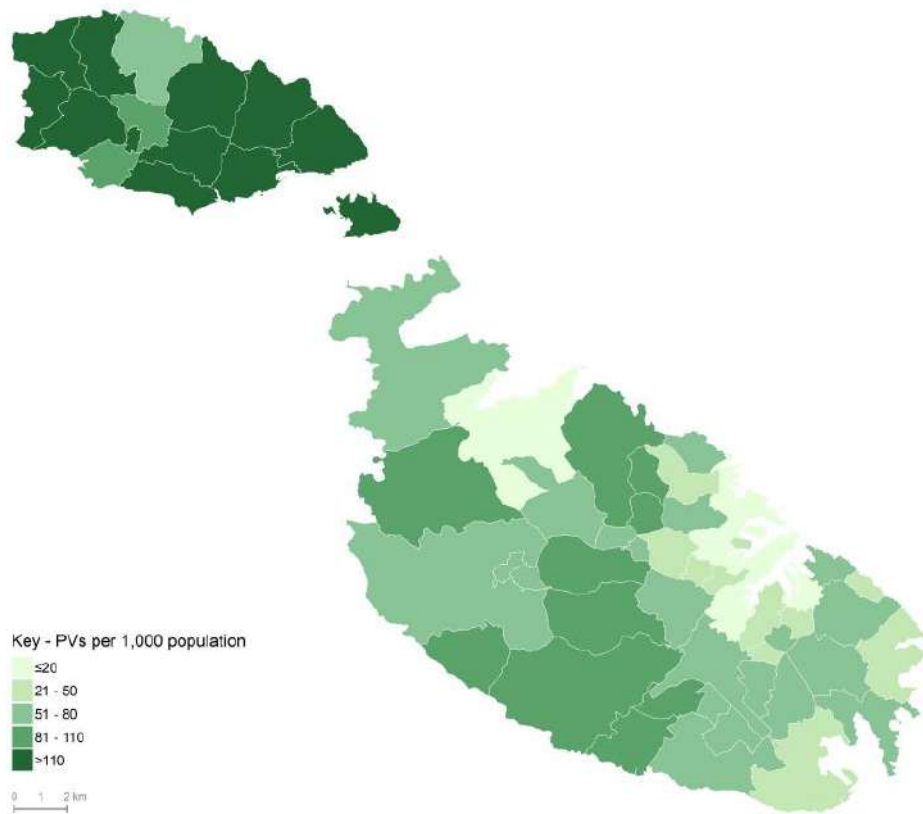


FIGURE 38: TOTAL PV INSTALLATIONS IN THE DOMESTIC SECTOR PER 1000 POPULATION FOR 2020⁴⁸

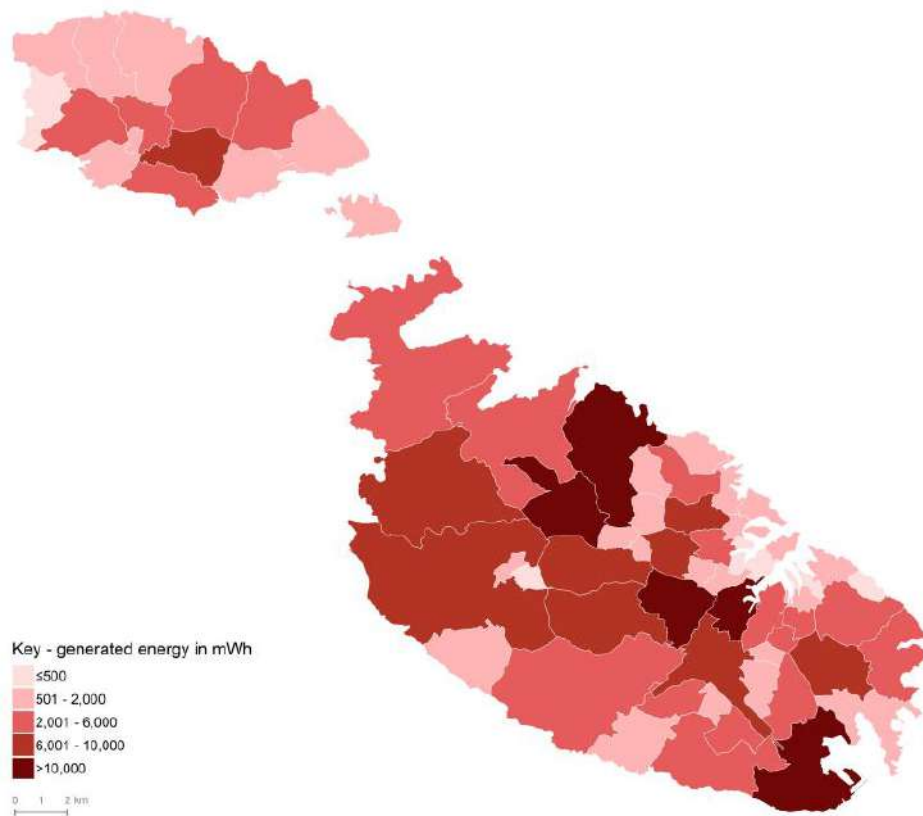


FIGURE 39: TOTAL ESTIMATED MWH OF PV INSTALLATIONS IN 2020⁴⁸

5.5.2 Electricity Consumption

The air pollution associated with the use of fossil fuels for energy production is a major concern for Malta from a climate change perspective. Over the last two decades, there has been a general increase in the electricity consumption for the Maltese Islands (Figure 40).⁶ Between 2008 and 2015, billed electricity consumption increased from 1,665.2 GWh to 2,032.9 GWh, which equates to a 22.1% surge.⁶ The energy consumption by sector shows that between the 2008-2015 period, the transport, industrial and residential sectors have all reported increases in electrical consumption. The services sector reported the largest increase in consumption (37.1%) between 2008 and 2015.⁶ Other sectors which recorded notable increases in electrical consumption were the households' sector (32.3%) and the industrial sector (26.8%).⁶

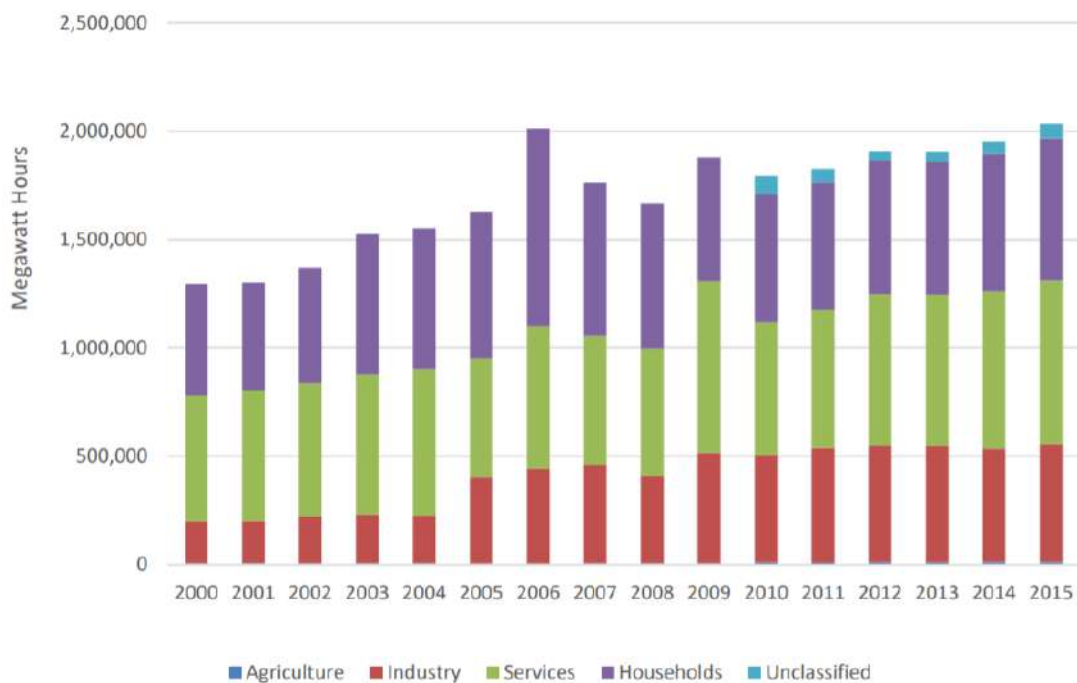


FIGURE 40: BILLED ELECTRICITY CONSUMPTION BY SECTOR⁶

5.5.3 Fuel Consumption

Fuel consumption in Malta is primarily to power internal combustion engines (ICE), generate electricity and to power various gas-powered household appliances and industrial machines. The primary use for motor gasoline (petrol) and automotive diesel is for road transport, which increased between 2010 to 2019.⁴⁹ The quantities of both petrol and diesel noticeably decreased in 2020, when compared to the previous year.⁴⁹ This is most likely attributable to the COVID-19 pandemic and associated national lock downs and working restrictions. LPG also exhibited the same trend; steadily increasing between 2010 and 2019 before decreasing in 2020. In contrast, the quantity use of biodiesel continued to increase in 2020, showing a 20.3% increase when compared to the 2019 consumption.⁴⁹

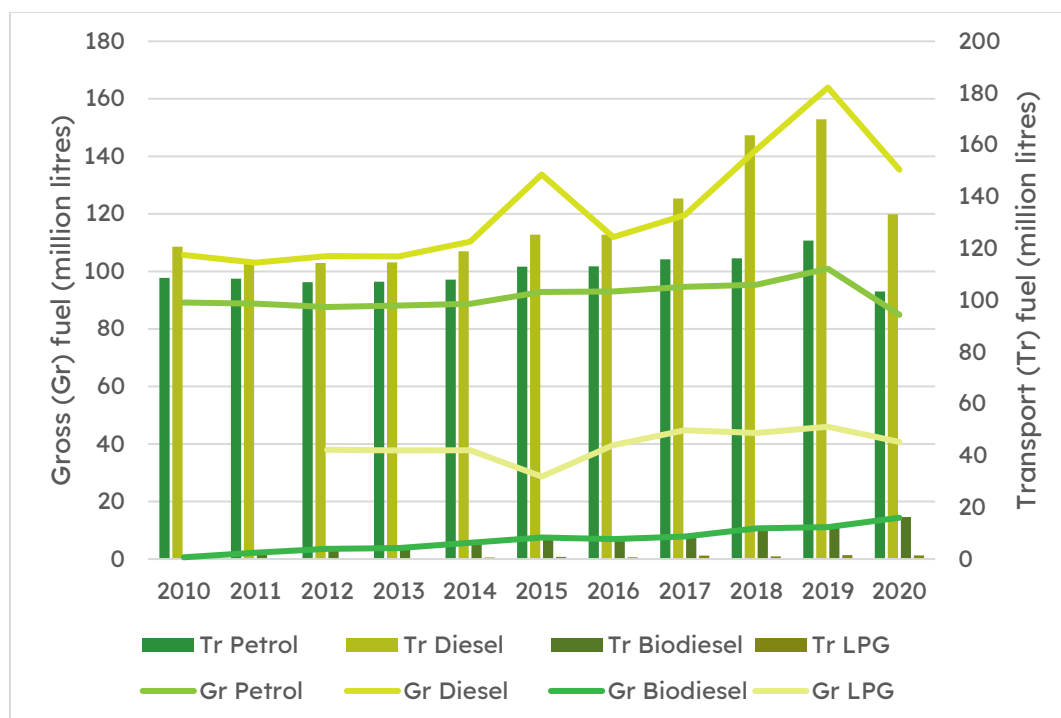


FIGURE 41: GROSS (Gr) AND TRANSPORT (Tr) FUEL CONSUMPTION BY ROAD TRANSPORT^{49,50,51,52}

5.5.4 Security of Supply

The sourcing of energy through a variety of sources and types helps ensure security of supply. Close coordination between neighbouring countries is vital to ensure security of supply since energy markets are tightly interconnected.

Malta’s electricity supply originates from two primary sources, namely the Malta-Sicily interconnector and the LNG-to-power facilities at Delimara using LNG as fuel for power generation. Malta’s electricity grid is linked to the European grid via the 200MW Malta-Italy subsea interconnector, which ensures that Malta’s interconnectivity shall remain well above the EU-wide target of 15% throughout the

⁴⁹ NSO (2021) Transport Statistics 2021: Reference Year 2020. <https://nso.gov.mt/en/nso/Media/Salient-Points-of-Publications/Documents/2022/Transport%20Statistics%202021/transport-2021.pdf>

⁵⁰ NSO (2019). Transport Statistics 2019: Reference Year 2018. https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/B3_Environment_Energy_Transport_Agriculture_Statistics/Transport_Statistics_2019.pdf

⁵¹ NSO (2018). Transport Statistics 2017. https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/B3_Environment_Energy_Transport_Agriculture_Statistics/Transport_Statistics_2017.pdf

⁵² NSO (2017). Transport Statistics 2016. https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/B3_Environment_Energy_Transport_Agriculture_Statistics/Transport_Statistics_2016.pdf

whole projected period. The interconnector contributes to the robustness of the electricity system and strengthens Malta's security of supply ⁵³.

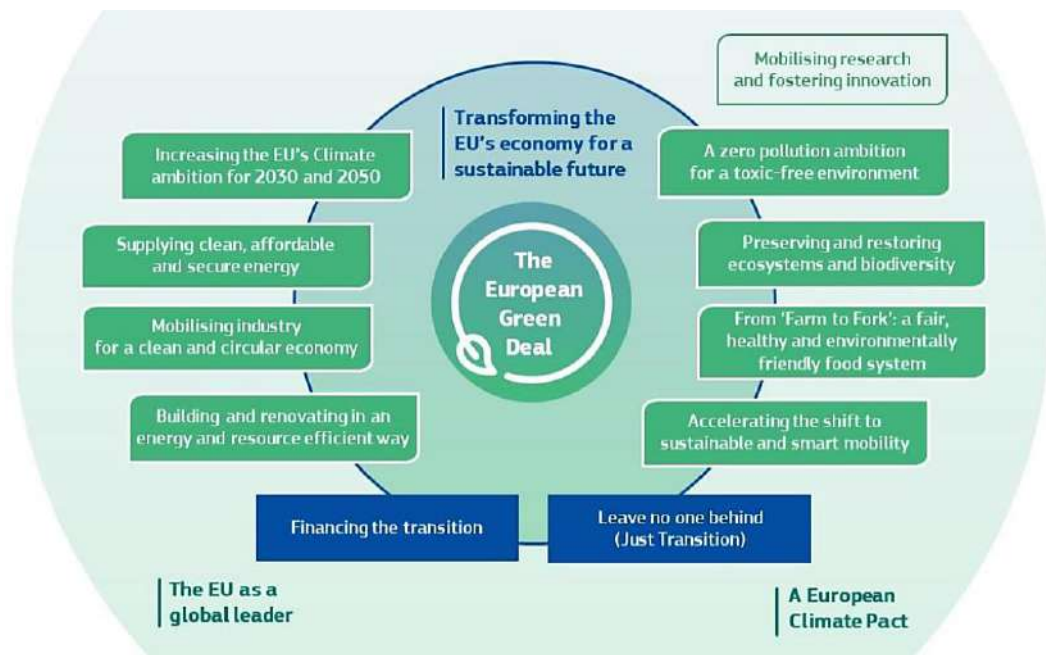
Given the assumed increase in energy demand over time, for the energy grid to decarbonise by gradually moving away from the use of gas, the installation of an additional interconnector as an alternative source of supply is being considered. This is being envisaged to be installed to cater for electricity generation, as the energy grid decarbonises by moving away from the use of gas over time. Grid decarbonisation is achieved because the emissions associated with power generation take place outside of the territory of Malta, so are not counted in the national emissions inventory; nonetheless the cost of emissions is included in the cost of the purchased electricity ⁵⁴.

The BP STATISTICAL REVIEW OF WORLD ENERGY (2019) concluded that if global demands for oil and natural gas sources continue at present rates, both non-renewable supplies are expected to run out on a global scale in about 50 years.⁵⁵ The introduction of infrastructure which can generate and supply renewable energy is vital, particularly with Europe's recent introduction of the EUROPEAN GREEN DEAL which aims to make Europe the first climate-neutral continent by 2050 (Figure 42), as well as the commitments

⁵³ National Energy and Climate Plan (NECP) 2021-2030, The Energy and Water Agency https://www.energywateragency.gov.mt/wp-content/uploads/2021/10/MT-NECP-FINAL-2020-10-05_Corrigendum.pdf

⁵⁴ Malta Low Carbon Development Strategy, 2021 https://unfccc.int/sites/default/files/resource/MLT_LTS_Nov2021.pdf

⁵⁵ BP (2019). BP Statistical Review of World Energy. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-full-report.pdf>

FIGURE 42: EUROPEAN GREEN DEAL⁵⁶

5.5.5 Water Production and Consumption

Ground water and reverse osmosis are the only two sources of potable water for the Maltese islands.⁵⁷ Reverse osmosis (RO) plants provide the majority of the Maltese drinkable water. RO plants are by nature very energy intensive. However, the operators of the local plants have installed energy recovery systems to reduce the overall consumption in the water treatment process. A RO plant in Hondoq, Gozo was recently constructed to supply the Gozitan population with freshwater and relieve dependence of freshwater provision from the mainland.

Maintaining and where feasible improving the quality of the groundwater supplies is crucial. In an attempt to protect the natural fresh water supplies, the 2nd Water Catchment Management Plan, has established safe guard zones around the registered abstraction stations. The abstraction of potable water from groundwater only occurs at four of the aquifers: Mgarr Perched, Malta Mean Sea Level, Gozo Mean Sea Level and Mizieb Mean Sea Level (refer to Figure 44). All four of these waterbodies have passed the Drinking Water Test.

The Water Intended for human Consumption Regulations (S.L.449.57) outline the standards for the quality of potable water within the Maltese Islands. This legislation stipulates the microbiological and chemical thresholds for water for human consumption. According to the SoER 2018 report, WSC have never failed to provide water below the microbiological parameters. However, the WSC has noted increase in

⁵⁶ European Commission (2019). The European Green Deal Communication. https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

⁵⁷ NSO (2019). Key Figures for Malta. Excel data. <https://nso.gov.mt/en/nso/Media/Salient-Points-of-Publications/Pages/Key-Figures-for-Malta---2019.aspx>.

Boron levels, and the boron exceedances have been resolved through the installation of high rejection reverse osmosis membranes in 2018.⁶

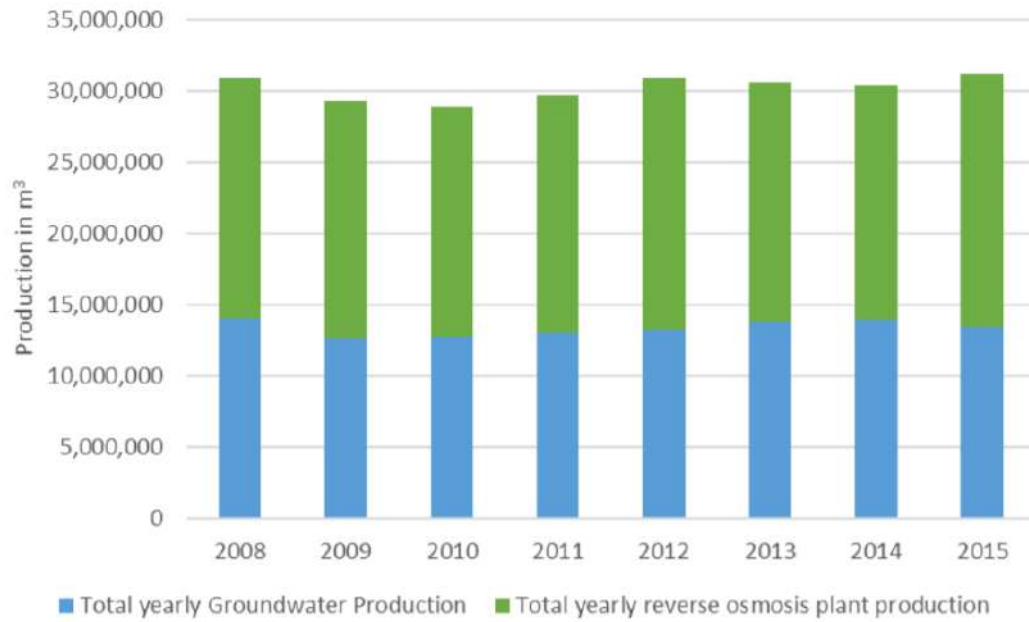


FIGURE 43: ANNUAL POTABLE WATER PRODUCTION (2008 - 2015)⁶

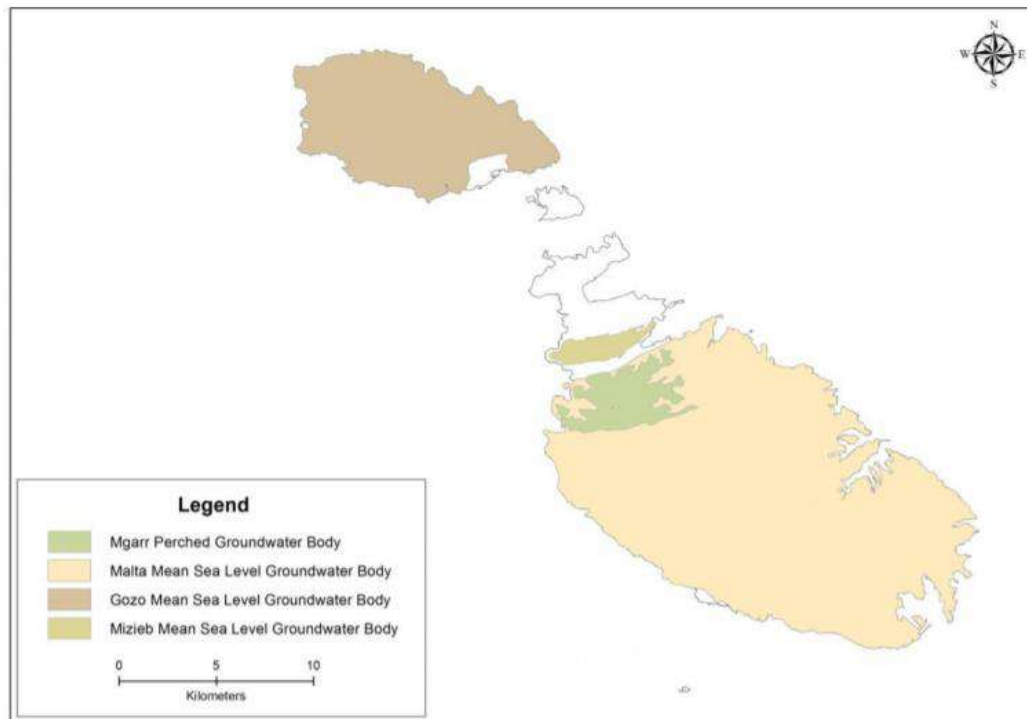


FIGURE 44: GROUNDWATER BODIES USED FOR THE EXTRACTION OF WATER FOR HUMAN CONSUMPTION⁵⁸

⁵⁸ ERA (2014). The 2nd Water Catchment Management Plan for the Malta Water Catchment District 2015 - 2021

Between 2015 and 2020, public water production increased by ca. 11%, covering a 13% increase in consumption.⁵⁹ In 2020, a total of 34.6 million cubic metres of water were produced, approximately 9.5% losses of input network were recorded in Malta, and 14.2% were recorded in Gozo and Comino.⁵⁹ This figure is smaller than the previous years; reflecting WSC's recent efforts to repair and improve the water distribution network. The main source of the public water was the reverse osmosis plants (58%), followed by the pumping stations (23%), boreholes (19%) and the Gozo polishing plant (<1%).

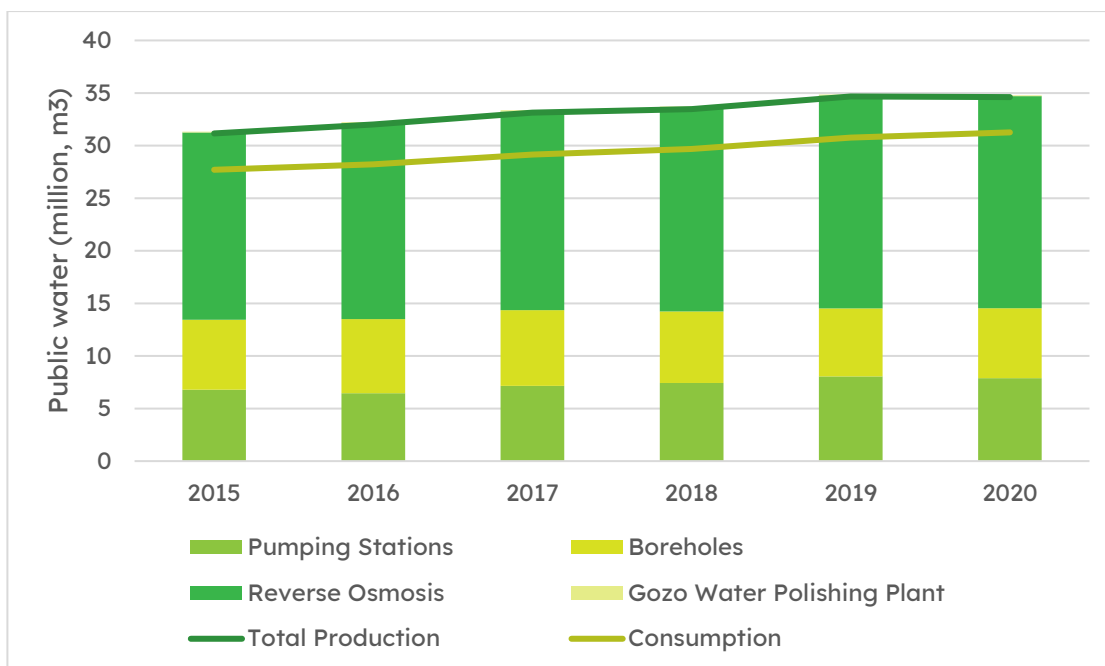


FIGURE 45: POTABLE WATER PRODUCTION AND CONSUMPTION BETWEEN 2015 AND 2020⁵⁹

5.6 CLIMATE CHANGE

Climate change is a process whereby greenhouse gases (GHGs), produced by both natural and anthropogenic activities, trap heat radiating from the Earth's surface and raise global temperatures (i.e. climate change).⁶⁰ GHGs which have the highest impact on climate change are:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);

⁵⁹ NSO (2021). Regional Statistics: Malta 2021 Edition. https://nso.gov.mt/en/nso/Media/Salient-Points-of-Publications/Documents/2021/Regional%202021/Regional%20Statistics%202021_full%20publication.pdf

⁶⁰ ERA (2018). State of the Environment Report 2018 Chapter 3: Climate Change. Reporting Status from 2009 To 2015. https://era.org.mt/wp-content/uploads/2019/05/Chapter3_ClimateChange-26Nov2018.pdf

- Perfluorocarbons (PFCs);
- Sulphur hexafluoride (SF₆); and
- Natrium trifluoride (NF₃).⁶⁰

While climate change is a natural process, increased concentrations of anthropogenically produced GHGs have caused climate change to accelerate. Human induced climate change is resulting in serious environment issues. Since Malta is a small island state, it is particularly vulnerable to climate change.

5.6.1 GHG Emissions

MALTA'S NATIONAL INVENTORY OF GREENHOUSE GAS EMISSIONS (2020) reveals that there has been an overall increase of 24.7% in Malta's GHG emissions between 1990 and 2012. In contrast, the emissions decreased by 39.3% between 2012 and 2016. Before, rising again in 2017 and 2018.⁶¹

The overall trends in the GHGs emissions reflect the changes in the emissions association with the energy sector. Since the energy sector is the largest contributor towards national GHGs emissions, any changes in the energy emissions influences the overall GHG emissions. Similarly, since the energy sector is closely associated with energy generation and transport, changes in these two sectors also affect the overall level of GHG emissions. The decrease in GHG emission post 2012 can be directly attributed to the investment in new electricity generation capacity, fuel switching and alternative sources. The reversal of the trend between 2016 and 2017 is linked to the shift back towards local electricity generation.⁴⁸

⁶¹ MRA (2020). Malta's National Inventory of Greenhouse Gas Emissions and Removals, 2020 https://cdr.eionet.europa.eu/mt/eu/mmr/art07_inventory/ghg_inventory/envxmtz3q/Malta_NI_R_1990-2018_March_2020_V3.pdf

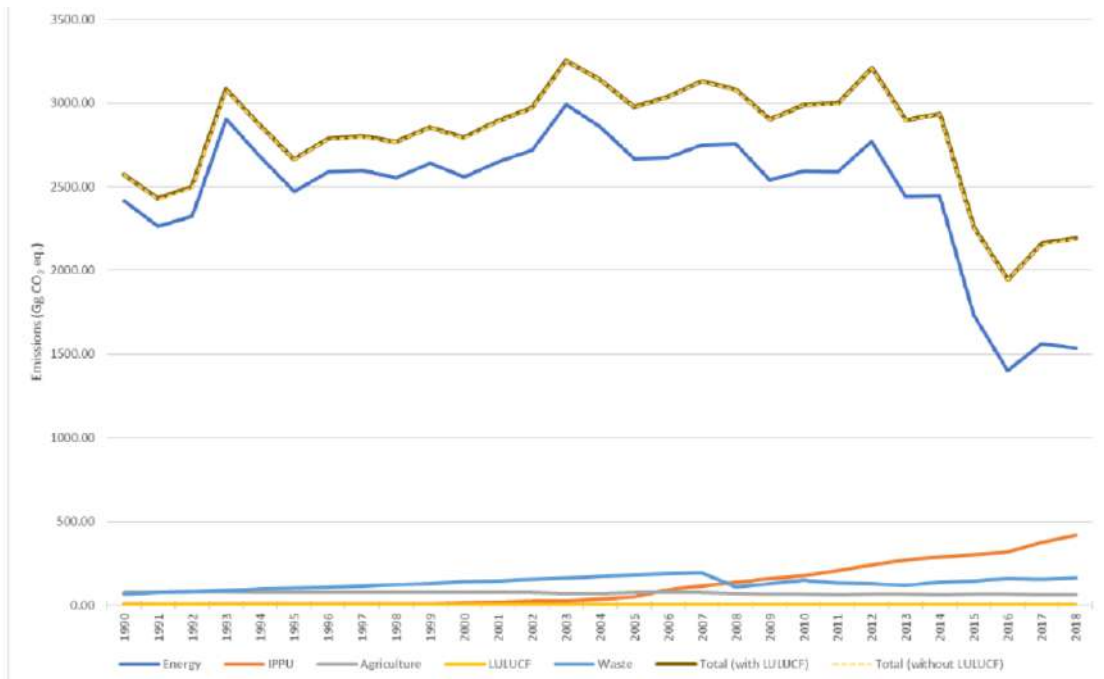


FIGURE 46: GHG EMISSIONS BY DIFFERENT ECONOMIC SECTORS (1990-2018)⁴⁸

Between the years 1990 and 2012 there was a strong correlation between the GHG emissions and Maltese population. As the population grew, the levels of GHGs increased. The correlation between GHG emissions and population size has no longer existed since 2012. The decrease in emissions post 2012 can be attributed to major technical advancements in electricity generation.⁶¹ The decreasing trend was reverted between 2016 and 2017 when the substantial increase in GHG emissions lead to an increase in emissions per capita.⁴⁸

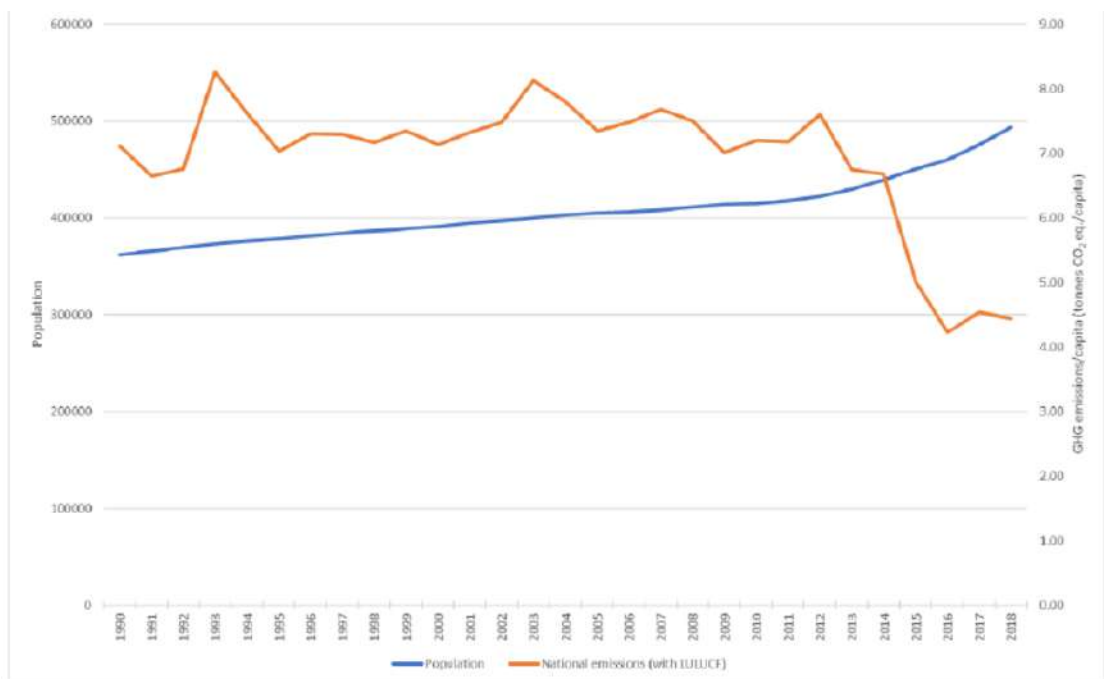


FIGURE 47: GHG EMISSIONS/CAPITA BETWEEN 1990 AND 2018⁶¹

The ratio between the gross inland consumption of energy and GDP at constant process is known as the energy intensity, and is a measure of the energy used to create a unit of economic wealth, as well as the overall energy efficiency at a nation's economy. The energy intensity has decreased steadily between 1995 and 2018.⁴⁸

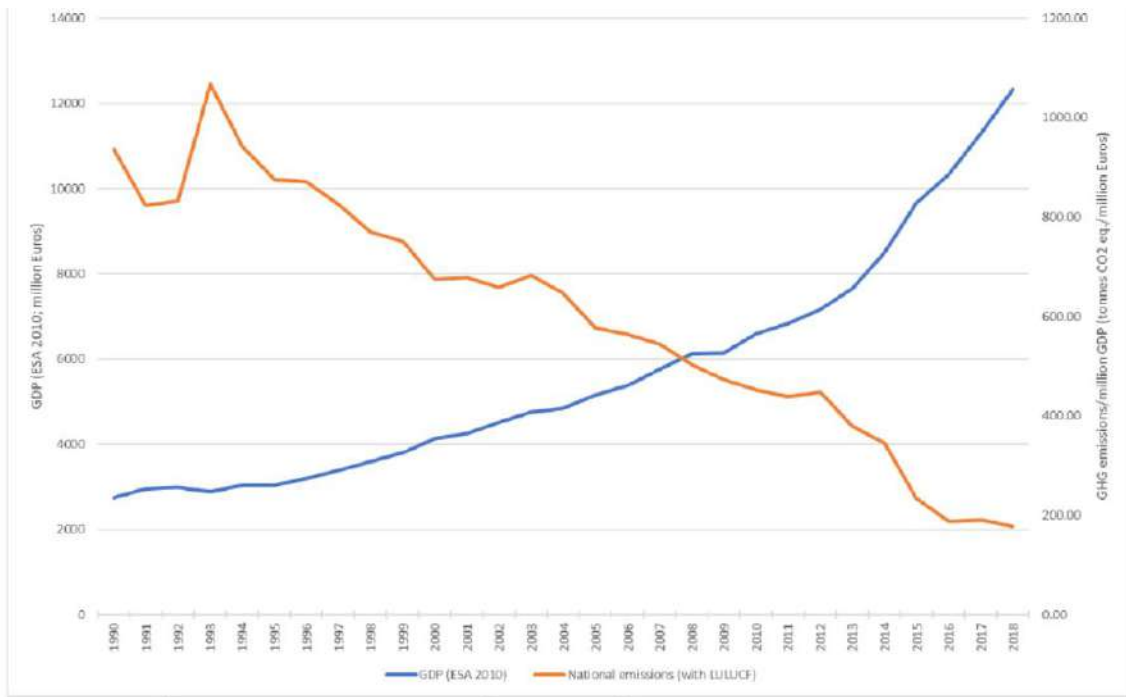


FIGURE 48: GHG EMISSIONS/GDP BETWEEN 1990 AND 2018⁶¹

The vast majority of the Maltese GHGs emissions are composed of Carbon Dioxide. The high levels of Carbon Dioxide emissions are associated with the combustion of fossil fuels in both in electricity generation and road transport. Between 1990 and 2003 they accounted for 90% of the total emissions, since then the levels have decreased but still make up more than 70%.⁴⁸ The changes in Carbon Dioxide levels reflect those in the changes in the emissions associated with the energy sector. As the percentage Carbon Dioxide emissions has decreased over recent years, the percentage of HFCs have increased. The increasing levels of HFCs is linked to industrial processes and product use.⁴⁸

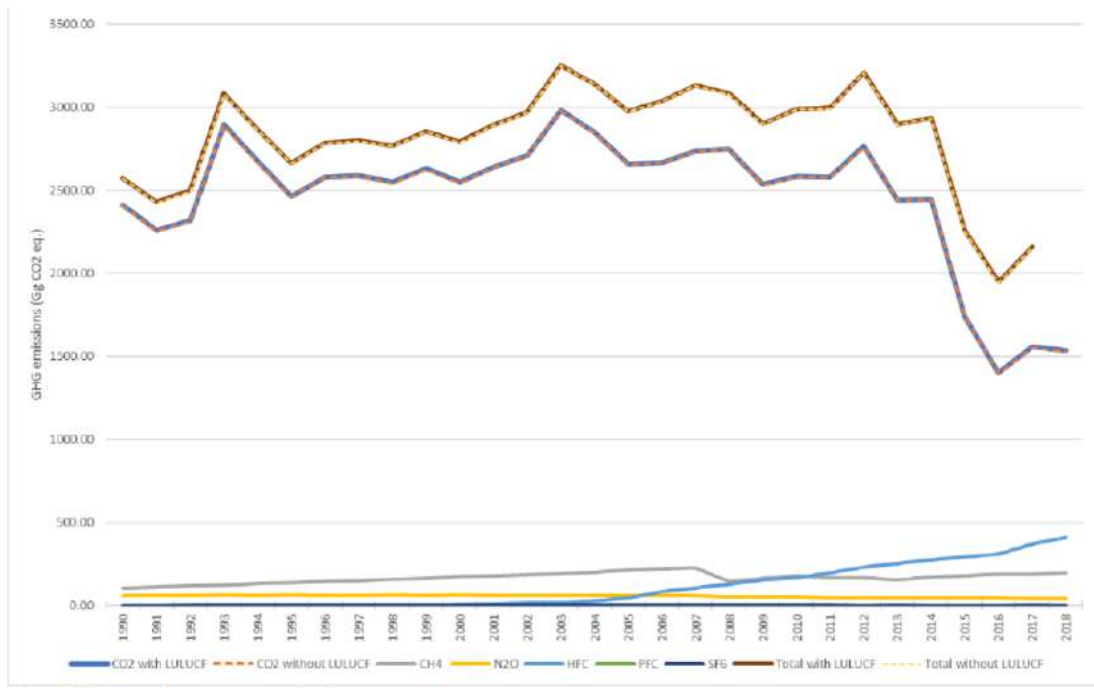


FIGURE 49: GHG EMISSIONS BY GAS BETWEEN 1990 AND 2018⁶¹

5.6.2 Weather Patterns

Climate change is associated with weather patterns over a number of years, as discussed in the 2018 SoER. Temperature and precipitation patterns amongst other factors contribute to the definition of a changing climate. While the temperature has fluctuated over the years, it has shown a general increasing trend between 1981 and 2015 (Figure 50).

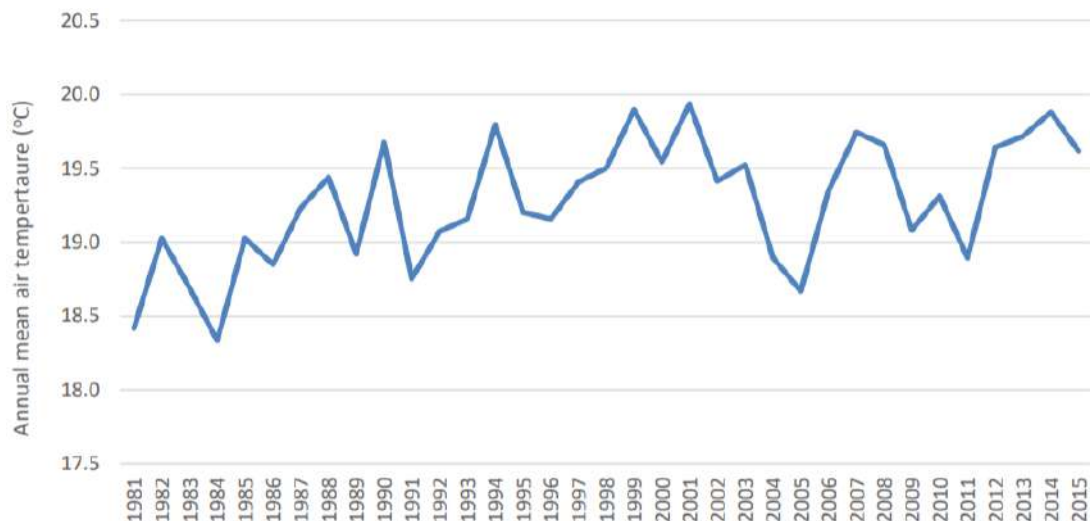


FIGURE 50: ANNUAL MEAN AIR TEMPERATURE IN MALTA⁶

In terms of precipitation, the number of consecutive dry days for the period 1967-2013 show an increased occurrence of dry conditions on the Maltese Islands. The 1981-2015 period (Figure 51) shows a decrease in total yearly precipitation, but so far

this trend is not statistically significant and may be attributable to the relatively short-time period considered.

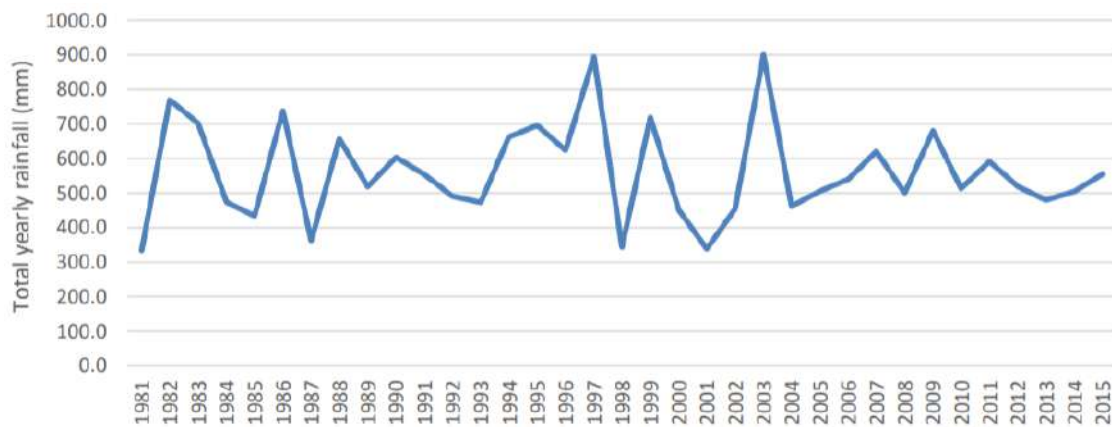


FIGURE 51: ANNUAL TOTAL RAINFALL IN MALTA⁶

5.7 TRANSPORT AND RELATED INFRASTRUCTURE

5.7.1 Vehicles by Type

Malta's population is heavily reliant on motor vehicles for transportation. In fact, Malta has the fifth-highest rate of passenger cars per capita in Europe, with 597 passenger cars per 1000 Maltese inhabitants.⁶² Locally, the daily number of vehicle registrations has been increasing steadily over the recent years (vide Figure 52), at a rate of 54 motor vehicles per day.⁶³ The only exception was in the Q1 and Q2 of 2020 when the number of registrations decreased. The NSO attributes this anomaly to the COVID-19 pandemic.

⁶² Eurostat (2021). *Passenger cars per 1 000 inhabitants*. https://ec.europa.eu/eurostat/databrowser/view/road_eqs_carhab/default/table?lang=en.

⁶³ NSO (2022). *Motor Vehicles: Q4/2021: News Release*. https://nso.gov.mt/en/News_Releases/Documents/2022/02/News2022_022.pdf

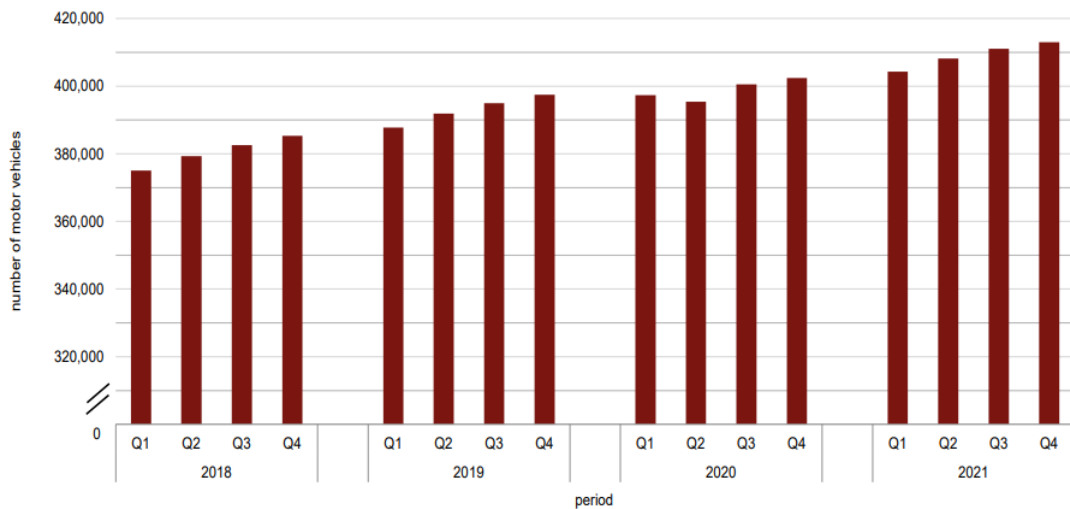


FIGURE 52: STOCK OF LICENSED MOTOR VEHICLES (Q1 2018 – Q4 2021)⁶⁵

As of the end of December 2021, only 1.6% of the entire vehicle stock on the road constituted electric and hybrid vehicles, totalling 6,625 vehicles.⁶⁵ When compared to the previous quarter (Q3 2021) there had been an increase of 33.3% for plug-in hybrid (diesel-electric), 18.2% for plug-in hybrid (petrol-electric) and 15.2% for combined (diesel-LPG) vehicles.⁵⁰

5.7.2 Bicycle and e-Bicycle Usage

The number of people using bicycles on the Maltese roads has increased in the last decade. This is partly attributable to the increasing provisions of cycling infrastructure on the roads. Although the competent authorities have identified this trend, the available statistics on bicycle usage across the Maltese Islands is limited since they do not need to be registered. The only relevant available data is the number of road accidents and injuries.⁶⁴ The National Cycling Strategy and Action Plan of 2018 states that there were 25km worth of designated traditional cycle lanes in the Maltese Islands at the time of writing. The Action Plan also forecast the construction of a further 7.7km of cycle lanes.

The NSO have combined the data relating to motorcycle, e-bicycle and pa-bicycles usage and registration, as shown in Figure 53. The data indicates that the stock of licensed motorcycles/e-bicycles/PA-bicycles has been increasing since 2011.⁴⁹

⁶⁴ TM (2018). *National Cycling Strategy and Action Plan for the Maltese Islands*.

https://meae.gov.mt/en/Public_Consultations/MTI/Documents/TM%20National%20Cycling%20Strategy.pdf

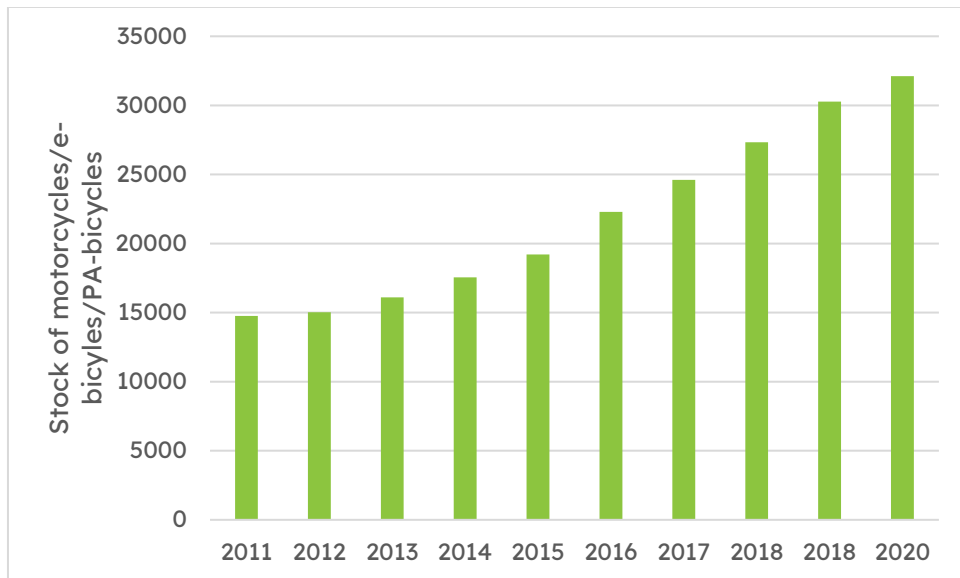


FIGURE 53: STOCK OF LICENSED MOTORCYCLES/E-BICYCLES/PA-BICYCLES (2011 – 2020) ⁴⁹

5.7.3 Public Transport Usage

The Malta Public Transport bus system is the main form of public transport across the Maltese Islands. The number of public transport commuters at the end of 2020 totalled 33.78 million passengers, representing an 41.2% increase from the previous year (2019).⁴⁹ One needs to treat transport figures from 2019 and 2020 with caution. During this period, the Covid-19 pandemic and associated lockdowns/restrictions drastically reduced the numbers of both tourists and locals travelling around the Maltese Islands. In contrast, the number of personalised public transport card holders increased by 5.6% over 2019, indicating an increasing in regular public transport users.⁴⁹

The number of public transport users fluctuates throughout the year due to the increased numbers of tourists during the summer months. This is more apparent in the 2017 and 2018 data, before the onset of the COVID-19 pandemic and associated travel restrictions (vide Figure 55).

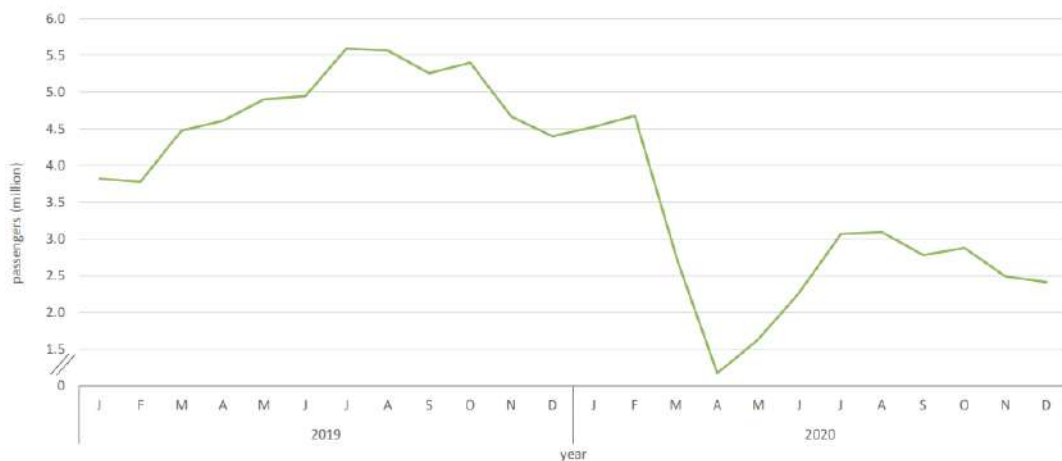


FIGURE 54: NUMBER OF PUBLIC TRANSPORT COMMUTERS (2019 – 2020)⁴⁹

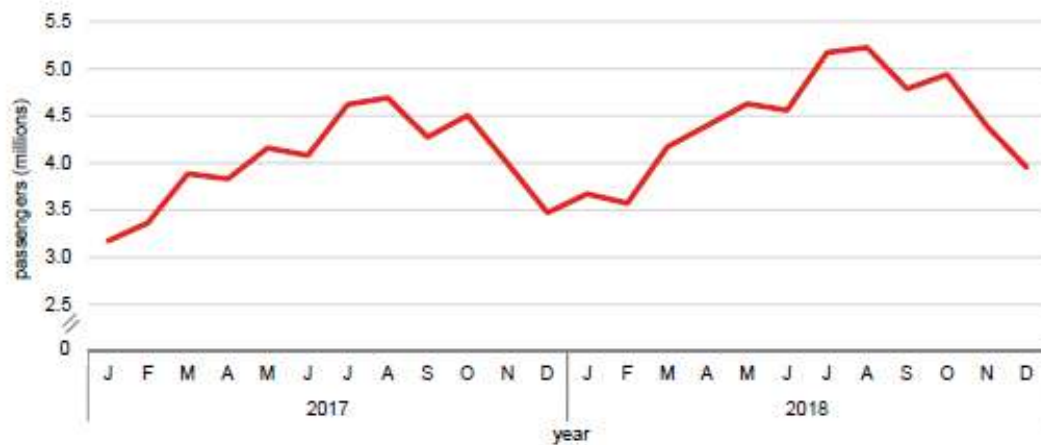


FIGURE 55: NUMBER OF PUBLIC TRANSPORT COMMUTERS (2017 – 2018)⁶⁵

Prior to the onset of the COVID-19 pandemic, the number of commuters (both passengers and vehicles) between Malta and Gozo had increased between 2016 and 2019 (Figure 56). The travel restrictions as a result of the pandemic bucked the trend and resulted in a decrease in passengers and vehicles using the Gozo-Malta ferry service in 2020.

⁶⁵ NSO (2020). Transport Statistics 2019: Reference year 2018

https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/B3_Environment_Energy_Transport_Agriculture_Statistics/Transport_Statistics_2019.pdf

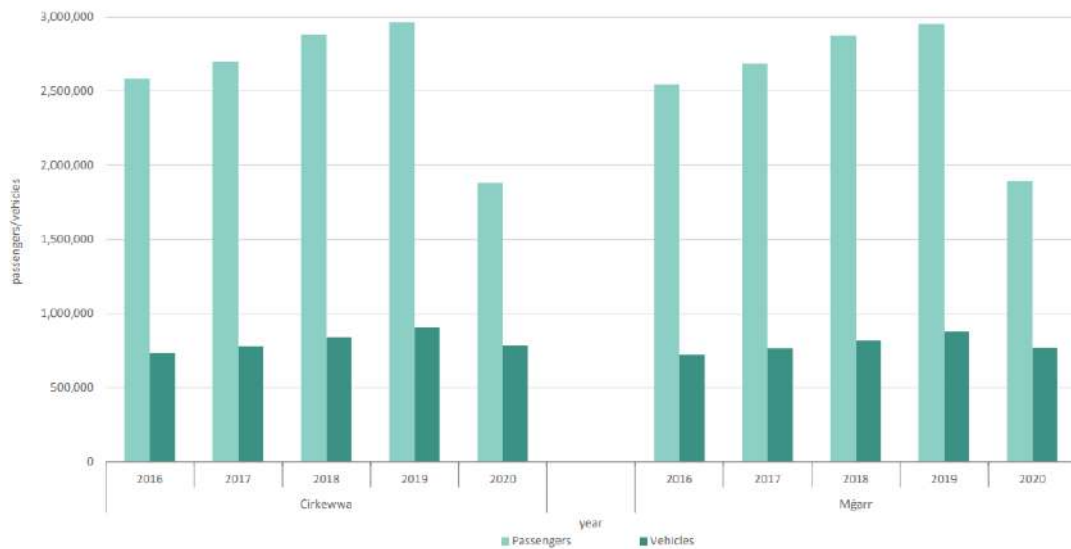


FIGURE 56: PASSENGERS AND VEHICLES TRAVELLING BETWEEN MALTA AND GOZO (2016 – 2020)⁴⁹

Two smaller passenger ferry services operate around Malta. One connects Marsamxett to the Three Cities and the other links Marsamxett to Sliema. The trends of passenger numbers for the Marsamxett-Three Cities service mirrors that of the Gozo-Malta ferry. The number of people using the service of the Gozo-Malta Ferry increased steadily between 2016 to 2019, reaching a peak of 572,646 passengers, before decreasing drastically in 2020 due to the COVID-19 pandemic down to 179,249 passengers. This represents a 68.7% decrease when compared to 2019 (Figure 57). The trend of passenger numbers for the Marsamxett-Sliema service differs slightly (Figure 58), with the passenger numbers increasing between 2016 to 2018 from 739,477 to 978,754 (ca. 32% increase), followed by a slight decrease to 911,527 in 2019 and a sharp decrease in 2020 down to 227,589 (a decrease of 75% from 2019 to 2020).

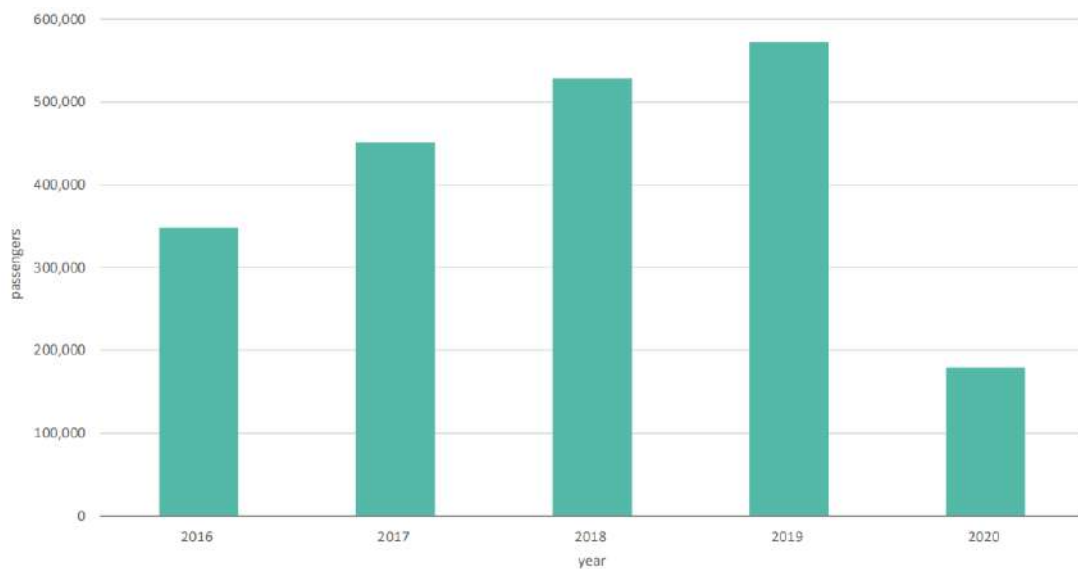


FIGURE 57: PASSENGER PATRONAGE ON THE MARSAMXETT-THREE CITIES FERRY SERVICE (2016 – 2020)⁴⁹

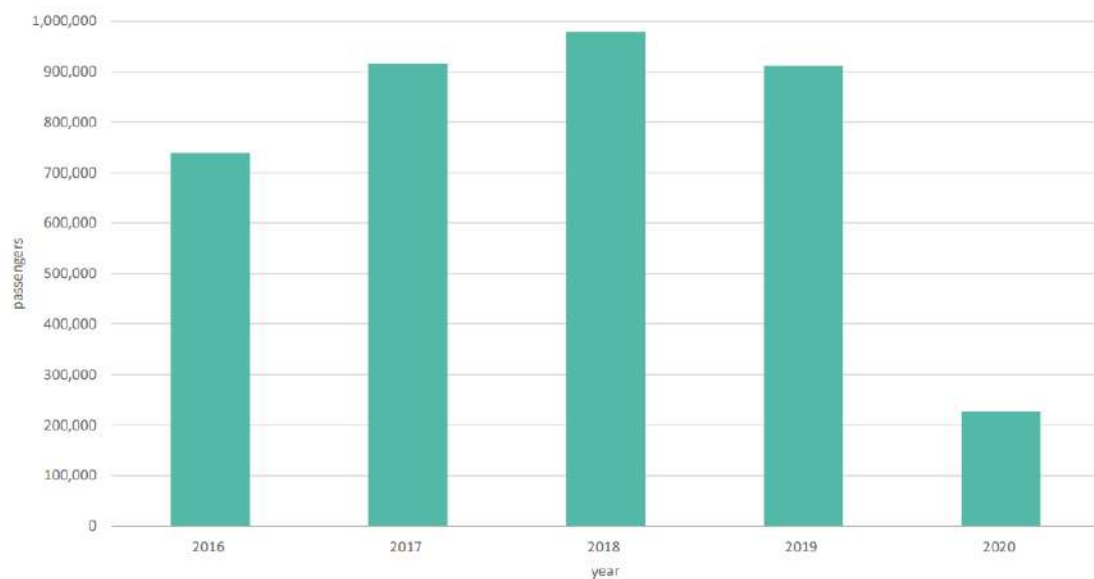


FIGURE 58: PASSENGER PATRONAGE ON THE MARSAMXETT-SLIEMA FERRY SERVICE (2016 – 2020)⁴⁹

5.8 WASTE MANAGEMENT

5.8.1 Waste Generation

Waste generation represents a loss of resources, and the management of waste places pressure on the environment in terms of air, water quality and land take-up. In line with relevant EU regulations, waste is divided into 4 categories:

1. Hazardous waste;
2. Non-hazardous mineral waste;
3. Non-hazardous secondary waste; and
4. Other non-hazardous waste.

Contra to the historic trend of increasing waste generation in the Maltese Islands. The quantity of waste generated between 2016 and 2020 has fluctuated, as illustrated in Figure 59. Waste generated between 2019 and 2020 decreased by 19.8%.⁶⁶ This decrease needs to be treated with caution in light of the Covid-19 pandemic and associated repercussions. There was a particularly large decrease in the quantity of mineral waste, which decreased by almost 533,563 tonnes.

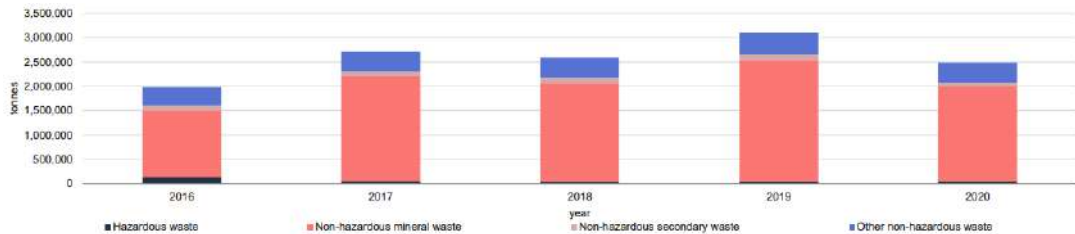


FIGURE 59: ANNUAL WASTE GENERATION BY CATEGORY (2016 - 2020)⁶⁶

The quantity of municipal waste generation has steadily increased between 2016 to 2019. Similarly, to the overall waste generation, it decreased by 5.6% from 2019 and 2020.⁶⁷ This decrease needs to be treated with caution as it may be partially attributable to the reduced numbers of tourists visiting the islands due to the Covid-19 pandemic. It is evidently clear that mixed municipal waste still makes up the largest percentage of municipal waste.

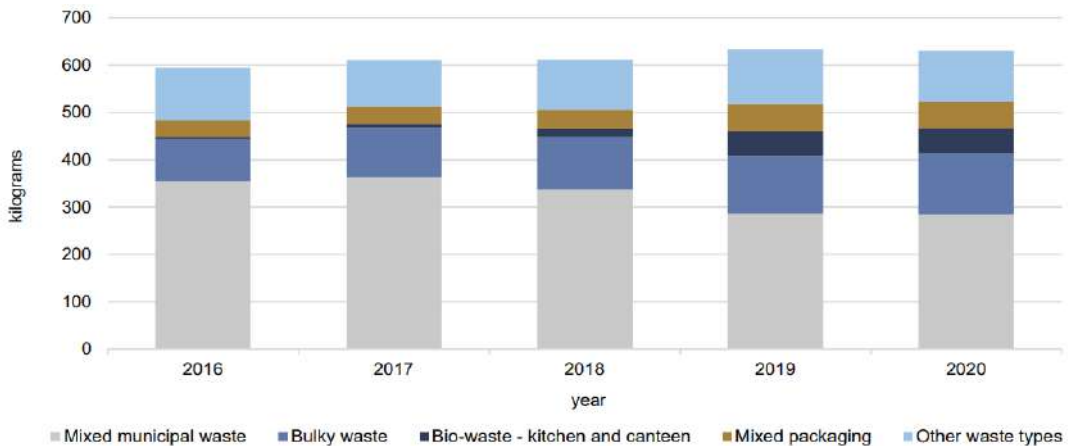


FIGURE 60: MUNICIPAL WASTE GENERATION PER CAPITA (2016 - 2020)⁶⁷

The LONG-TERM WASTE MANAGEMENT PLAN 2021 – 2030: CONSULTATION DOCUMENT published by MECP provided a detailed overview of historic trends of waste generation based on the main waste streams. Table 10 provides a summary of the

⁶⁶ NSO (2022). New Release: Solid Waste Management: 2020. https://nso.gov.mt/en/News_Releases/Documents/2022/02/News2022_021.pdf

⁶⁷ NSO (2021). News Release: Municipal Waste: 2020. https://nso.gov.mt/en/News_Releases/Documents/2021/12/News2021_222.pdf

recent trends for each of the major waste streams in the Maltese Islands. These trends are also presented graphically in Figure 61 to Figure 71.

TABLE 10: WASTE GENERATION RECENT TRENDS FOR INDIVIDUAL WASTE STREAMS⁶⁸

WASTE STREAM	RECENT TREND BETWEEN 2011 AND 2018
Mixed municipal	Increase of 5% between 2011 and 2018 from 247,000 tonnes to 306,000
Food	Increase between 2011 and 2018
Plastic	Increase from 63.0kg per capita in 2011 to 67.1kg per capita in 2018
Textile	Increase between 2011 and 2018. By 2018, a total of ca. 1,200 tonnes were collected. Significant increase in 2017 and 2018, attributed to the introduction of a new collection system (private initiative)
Packaging	Increase of ca. 30% between 2011 and 2017 from 53,000 tonnes to 69,000 tonnes
WEEE	Increase between 2011 and 2017
ELVs	Increase between 2011 and 2016 Sharp increase in Certificates of Destruction (CoDs) in 2015 and 2016 due to the increased number of Authorised Treatment Facilities.
Batteries and Accumulators	Relatively stable between 2011 and 2018
Commercial and Industrial	Fluctuations between 2011 and 2018
End-of-Life Tyres	Increase of ca. 35% between 2011 and 2018
Waste Oils	Average generation between 2011 and 2018: 13,000 tonnes
Construction and Demolition Waste	Fluctuations between 2011 and 2018. In 2017 generated in excess of 2,000,000 tones

⁶⁸ MECP (2020). Long Term Waste Management Plan 2021 – 2030: Consultation Document

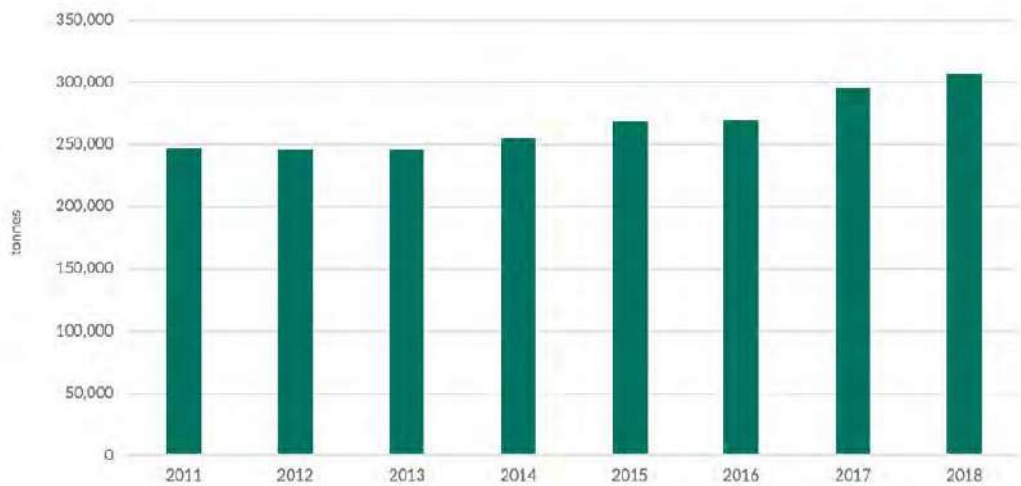


FIGURE 61: MIXED MUNICIPAL WASTE GENERATION (2011 – 2018)⁶⁸

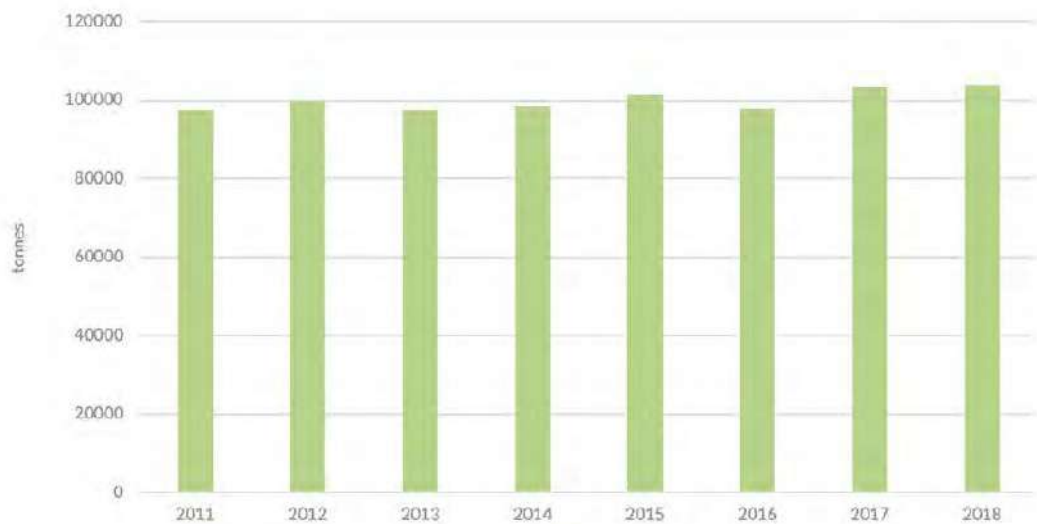


FIGURE 62: FOOD WASTE GENERATION (2011 – 2018)⁶⁸

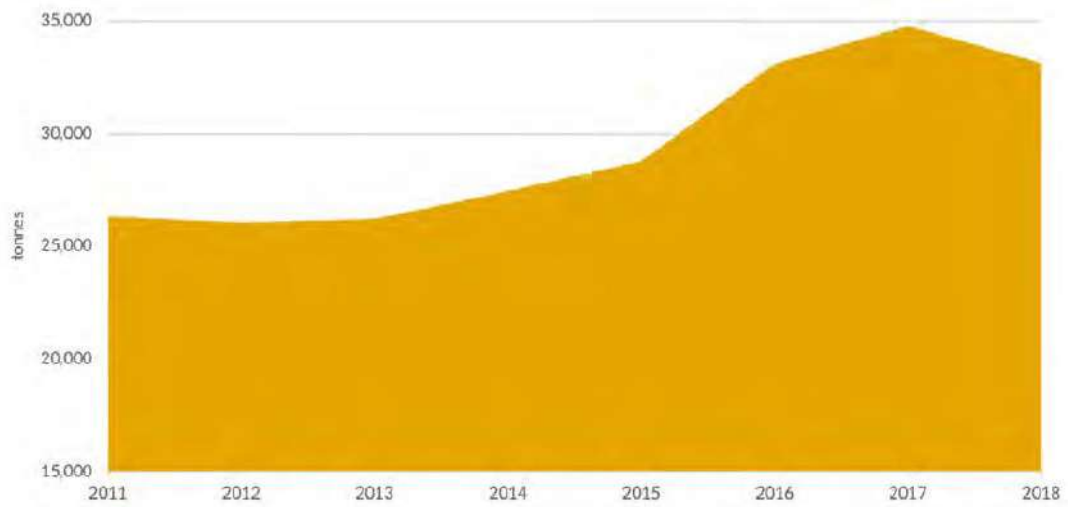


FIGURE 63: PLASTIC WASTE GENERATION (2011 - 2018)⁶⁸

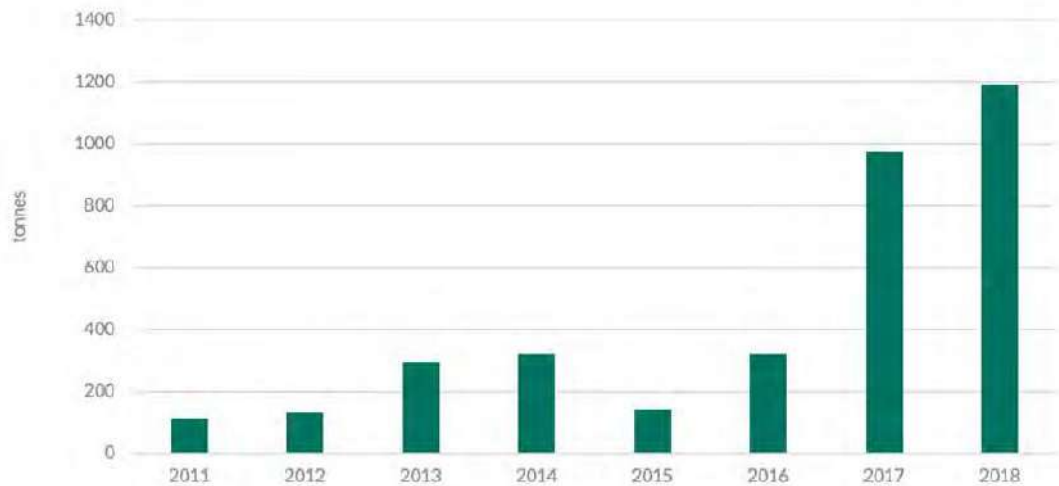


FIGURE 64: TEXTILES WASTE GENERATION (2011 - 2018)⁶⁸

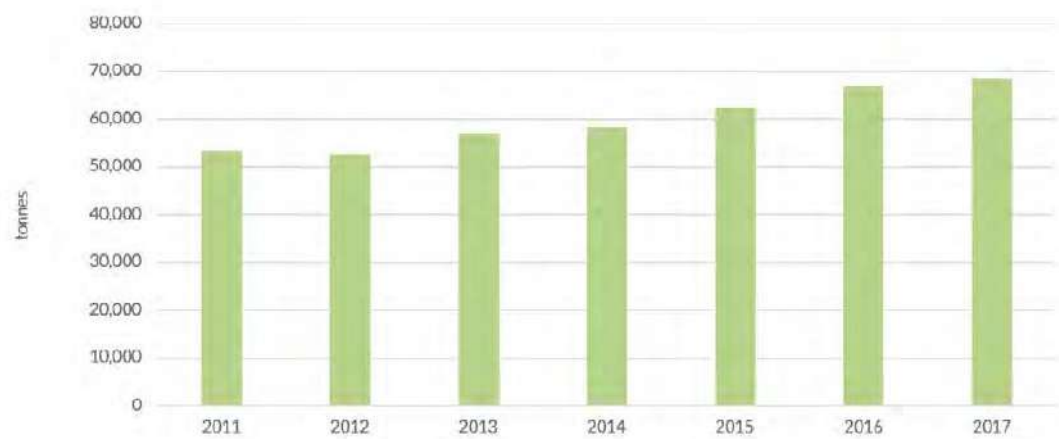


FIGURE 65: PACKAGING WASTE GENERATION (2011 - 2017)⁶⁸

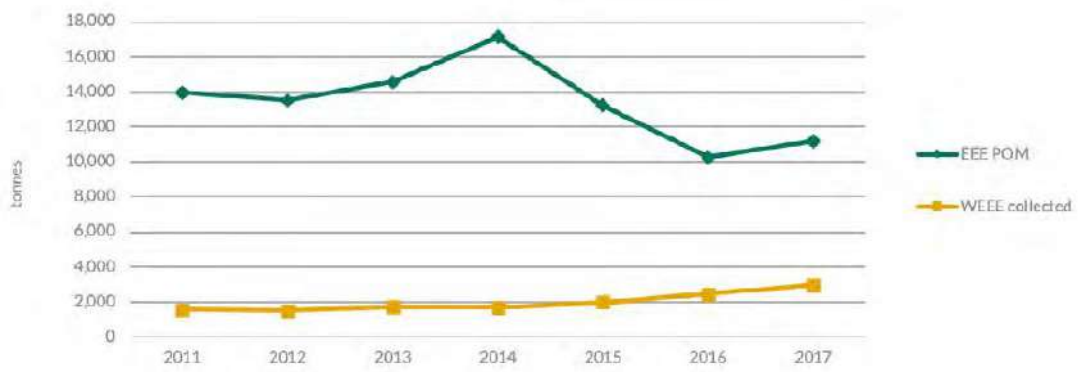


FIGURE 66: WEEE WASTE GENERATION^{68,69}

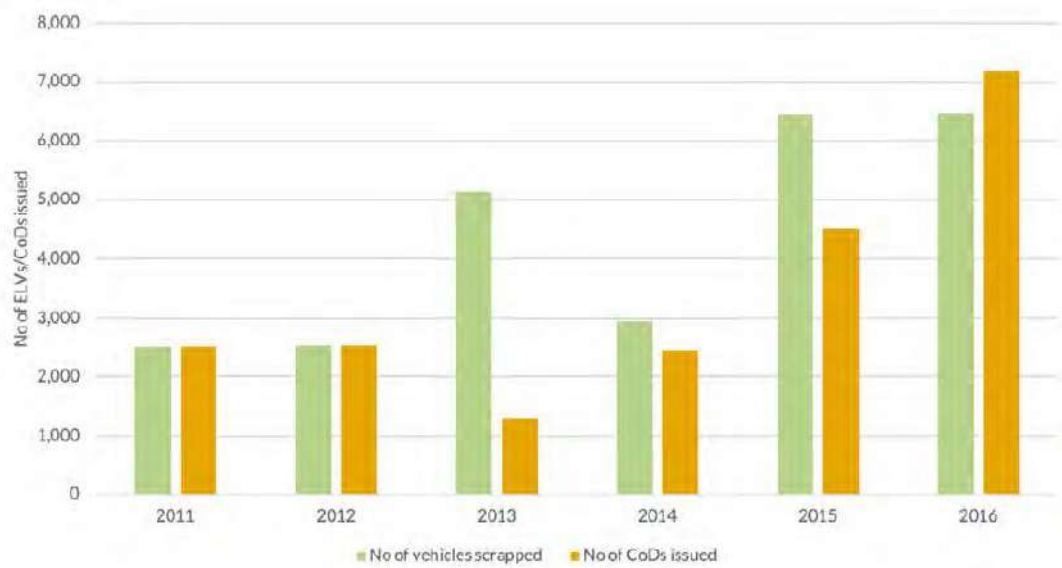


FIGURE 67: ELVs WASTE GENERATION (2011 – 2016)⁶⁸

⁶⁹ EEE POM = Electrical and Electronic Equipment Place on Market

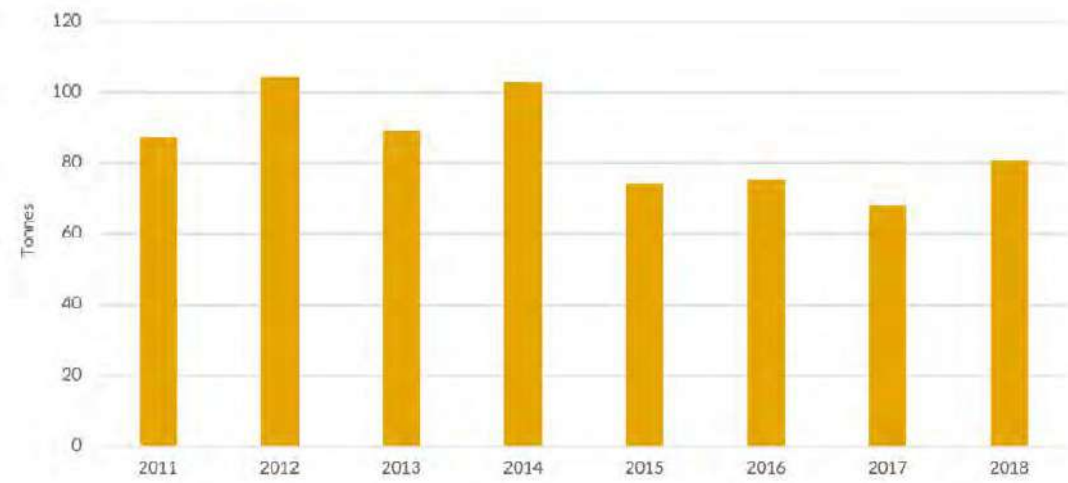


FIGURE 68: PORTABLE BATTERIES AND ACCUMULATORS PLACED ON THE MARKET (2011 - 2018)⁶⁸

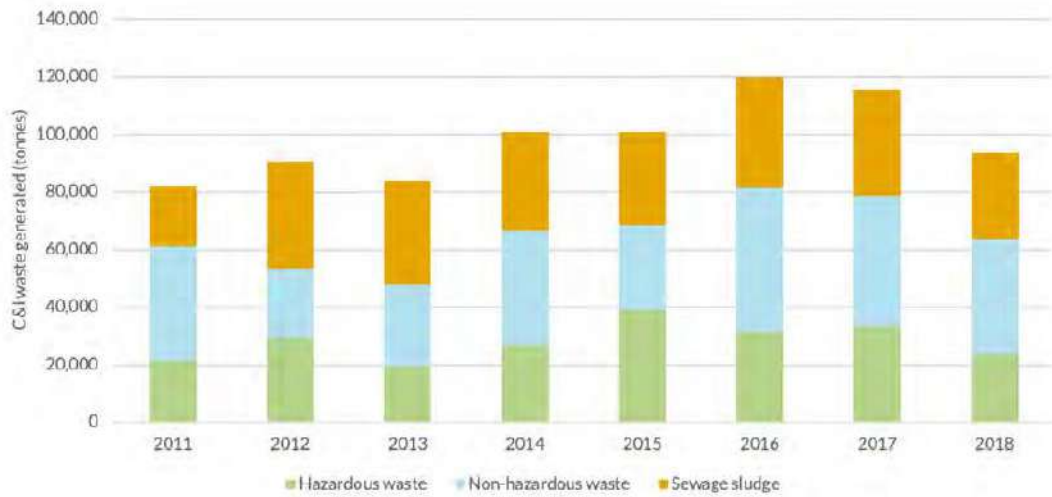


FIGURE 69: COMMERCIAL AND INDUSTRIAL WASTE GENERATION (2011 - 2018)⁶⁸

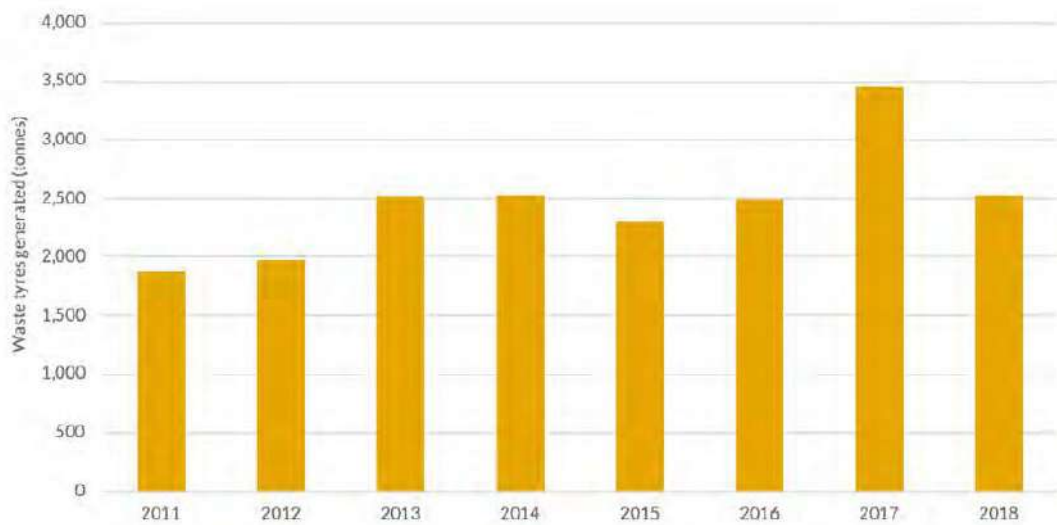


FIGURE 70: END-OF-LIFE TYRES WASTE GENERATION (2011 - 2018)⁶⁸

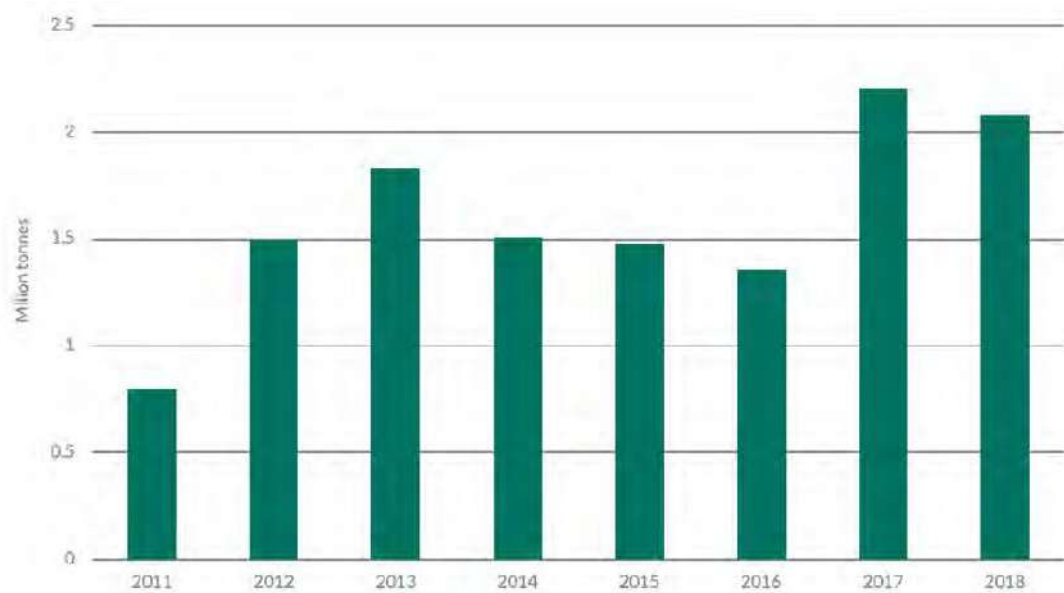


FIGURE 71: CONSTRUCTION AND DEMOLITION WASTE GENERATION (2011 – 2018)⁶⁸

5.8.2 Waste Treatment

The majority of waste generated within the Maltese Islands is landfilled. In 2020, the total amount of material dumped into local landfills totalled 303,917 tonnes.⁶⁶ This was contra to the trend of increasing landfilling quantities between 2016 and 2019. The quantities of material backfilled into quarries and recycled within the Maltese Islands also showed the same trend, with annual increases between 2016 and 2019; before a decrease in 2020.⁶⁶

In contrast to the other waste treatment methods, waste incineration in the Maltese Islands decreased between 2016 and 2017, and has since continued to increase steadily from 5,322 tonnes in 2017 to 6,011 tonnes in 2020.⁶⁶

Some of the waste generated locally is transported abroad for treatment/disposal as shown in Table 11. Also shown are the various methods of waste treatment and the amounts of waste undergoing such treatment between 2016 and 2020. This is also shown graphically in Figure 72. Waste that was recovered by backfilling and by recycling gradually increased from 2016 to 2019 and decreased between 2019 and 2020. Inert mineral waste disposed of at sea peaked in 2017 and decreased to minimal amounts by 2020. Waste disposed in landfills maintained a stable trend throughout the 5-year period.

TABLE 11: WASTE TREATMENT METHODS⁶⁶

		tonnes				
Waste treatment operation	Location of treatment	2016	2017	2018	2019 ²	2020
Disposal - Landfill	Malta	264,206	290,521	297,523	314,714	303,917
	Other countries	220	14,749	11,771	49,111	18,759
Disposal - Incineration	Malta	5,451	5,322	4,960	5,099	6,011
	Other countries	90	1,488	1,058	1,992	3,013
Disposal - Other ¹	Malta	16,000	425,000	120,000	-	26,908
	Other countries	59	-	-	-	-
Recovery - Energy recovery	Malta	-	-	-	-	-
	Other countries	973	746	161	-	43
Recovery - Recycling	Malta	198,291	317,682	395,626	819,544	696,190
	Other countries	175,927	102,757	108,876	86,946	89,516
Recovery - Backfilling	Malta	889,488	1,292,429	1,407,245	1,661,710	1,166,581
	Other countries	-	-	-	-	-
Total waste treatment		1,550,706	2,450,694	2,347,220	2,939,116	2,310,937

¹ In Malta this waste treatment comprises disposal of inert mineral waste and dredging spoils at sea.

² Revised.

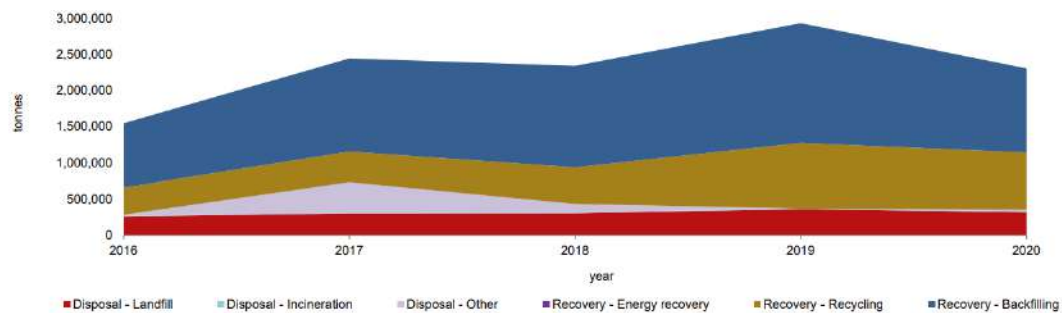


FIGURE 72: ANNUAL WASTE TREATMENT METHODS (2017 – 2020)⁶⁶

The quantities of inert mineral waste from numerous sources have varied significantly over the recent years.⁶⁶ This is because it is highly dependent on the nature of the construction works taking place. Table 12 shows the different waste categories of inert mineral waste, treatment operations and amounts undergoing such treatments between 2016 and 2020 whereas Figure 73 depicts such amounts and the respective treatment. An overall increase from 2016 to 2019 can be noted for mineral waste from construction and demolition which has been backfilled in quarries and recycled, followed by a gradual decrease from 2019 to 2020. Soils from excavation peaked in 2017 and decreased to negligible amounts by 2019, whereas dredged soils were disposed of at sea in relatively smaller amounts in the years 2017, 2018 and 2020 when compared to the other waste categories.

TABLE 12: INERT MINERAL WASTE TREATMENT METHODS

			tonnes				
Waste category		Waste treatment operation	2016	2017	2018	2019 ³	2020
EWG-Stat code	Description						
12.1	Mineral waste from construction and demolition	Backfilling in quarries	831,747	1,254,495	1,366,953	1,629,187	1,128,662
12.1	Mineral waste from construction and demolition	Recycling	198,291	314,224	392,847	816,670	692,613
12.2, 12.3, 12.5	Other mineral wastes ¹	Backfilling in quarries	57,741	37,934	40,292	32,524	37,919
12.6	Soils ²	Disposal at sea	16,000	-	-	-	-
12.7	Dredging spoils	Disposal at sea	-	425,000	120,000	-	26,908
Total			1,103,778	2,031,653	1,920,092	2,478,380	1,886,102

¹ Estimated value for backfilling of mineral waste generated by softstone quarrying (see methodological note 10).

² This category refers to inert mineral waste from excavation.

³ Revised.

Note: All waste categories included in this table are non-hazardous.

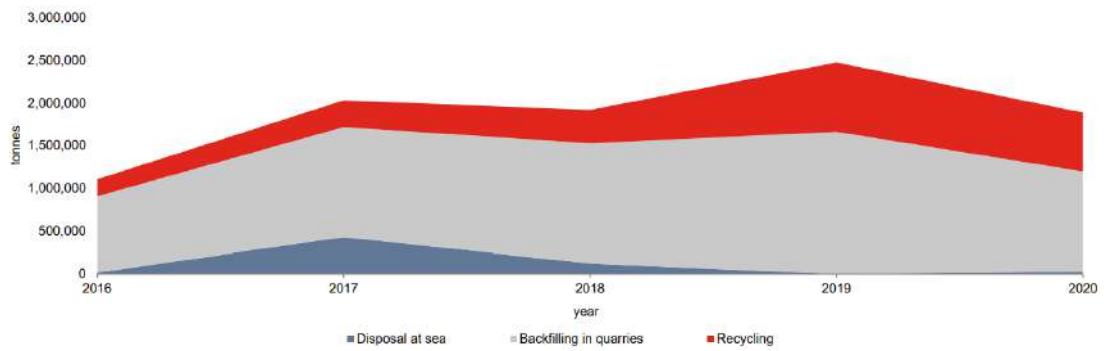


FIGURE 73: ANNUAL INERT MINERAL WASTE TREATMENT METHODS⁶⁶

The consultation document for the Waste Management Plan provides a detailed breakdown of the treatment on the individual waste streams between 2011 and 2018 (vide Table 13). The table shows that Malta is currently failing to achieve the EU targets/standards when it comes to the treatment of several different waste streams, namely Biodegradable Municipal Waste (BMW), packaging waste, End-of-life Vehicles (ELV) and batteries and accumulators.

TABLE 13: TREATMENT OF INDIVIDUAL WASTE STREAMS⁶⁸

WASTE STREAM	TREATMENT AND STATUS
Municipal solid	Majority is landfilled with only relatively small quantities being recycled. Recycling rate has remained stable between 2011 and 2018 (only 15% in 2018).
Biodegradable Municipal Waste (BMW)	Majority is landfilled, with a small percentage being recovered. Failing to meet EU 2020 target for quantities of landfilled BMW waste.
Food	Until recently, the majority was landfilled. Since 2018, all waste collected via the new household organic waste collection service has been treated by anaerobic digestion for the production of renewable energy.
Plastic	70% between 2011 and 2018 was landfilled and 28% exported abroad for recycling or reached end-of-waste status in Malta.
Textile	No information available.
Packaging	Low levels of recycling. Failed to meet EU target of 55% recycling.
WEEE	In 2017 met 3 out of the 10 EU WEEE recycling targets. Recycling rates are limited by the capacity of local facilities and demand abroad for exported WEEE.
End-of-life	Failing to meet EU targets for reuse/recycling and

WASTE STREAM	TREATMENT AND STATUS
Vehicles	reuse/recovery.
Batteries and Accumulators	Successfully achieved the EU collection target in 2013 and 2016. However, the target was increased in 2016 and Malta has failed to reach the new standard.
Commercial and Industrial	<p>Range of treatments including recycling (33.4%), recovery (13%), landfilling (39.3%) and incineration.</p> <p>All sewage sludge is currently landfilled (ca. 14% of landfilled waste).</p> <p>Majority of hazardous waste is exported abroad for treatment. Small amount incinerated, without any energy recovery.</p>
End-of-life Tyres	<p>Majority are exported outside of the EU for recycling and recovery.</p> <p>Landfill regulations prohibit the dumping of tyres (whole or shredded) into landfills.</p>
Oils	Relay heavily on exportation abroad as no local facilities permitted to recover the waste stream.
Construction and Demolition Waste	Majority is backfilled, especially since 2013 when backfilling was reclassified as a recovery operation. Remaining waste is recycled (ca. 15%) or dumped.

Figure 74 to Figure 78 show the progress towards reaching the EU targets for various types of waste, namely biodegradable municipal waste, packaging waste, Waste from Electrical and Electronic Equipment (WEEE), End-of-life Vehicles and batteries and accumulators. Malta has failed to achieve its waste treatment targets for most waste streams, either throughout the entire 2011-2018 period or for several years within this period.

The waste treatment methods used locally between 2011 and 2018 are demonstrated in Figure 79 to Figure 84. At a local scale, landfilling is considered the most common treatment option for the management of municipal waste. For municipal solid waste and biodegradable municipal waste, a peak in landfilling occurred in 2015. The peak in 2015 is a result of 59,000 tonnes of wood stored on site between 2010 and 2014 which was subsequently landfilled in 2015.

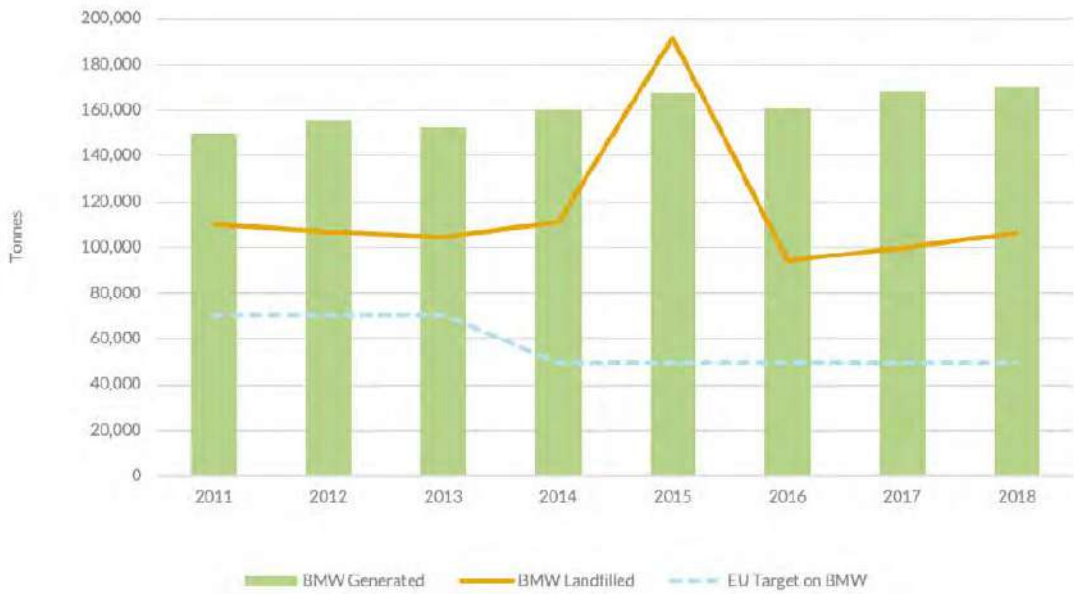


FIGURE 74: PROGRESS TOWARDS EU 2020 LANDFILLING TARGET FOR BIODEGRADABLE MUNICIPAL WASTE⁶⁸

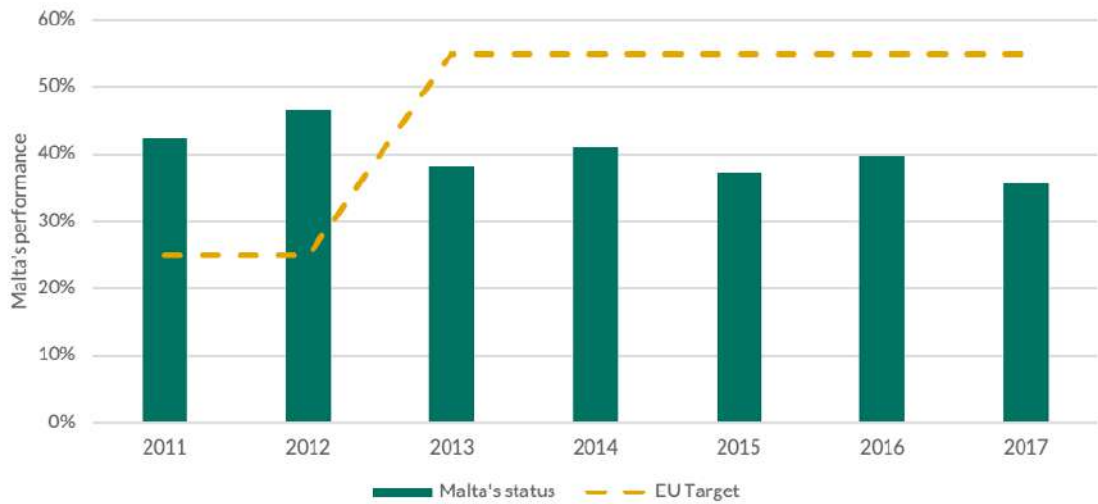


FIGURE 75: PROGRESS TOWARDS EU 2020 RECYCLING TARGET FOR PACKAGING WASTE (2011 - 2017)⁶⁸

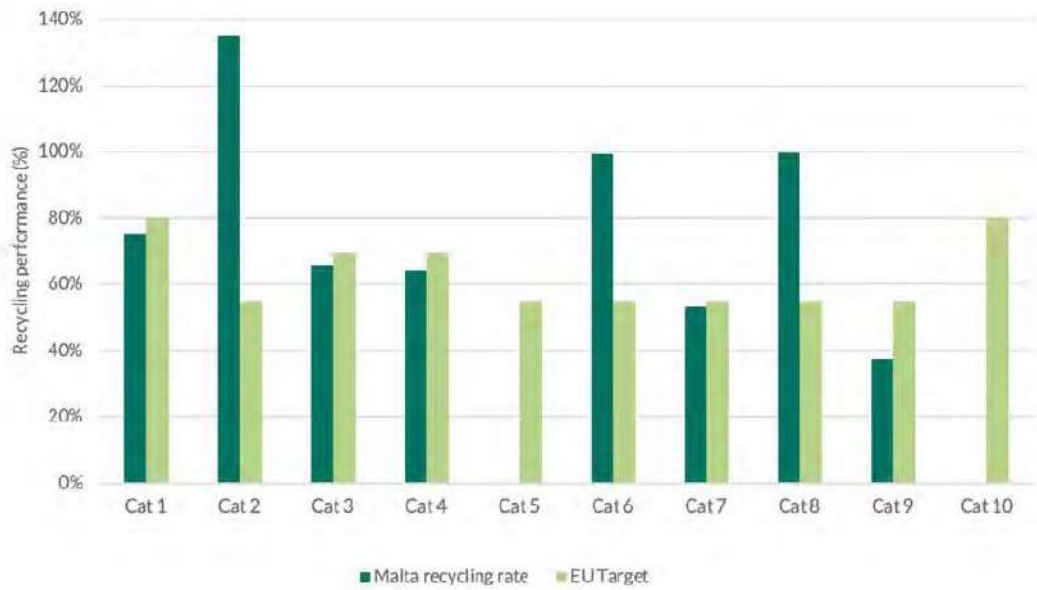


FIGURE 76: WEEE RECYCLING PERFORMANCE COMPARED TO EU TARGETS (2017)⁶⁸

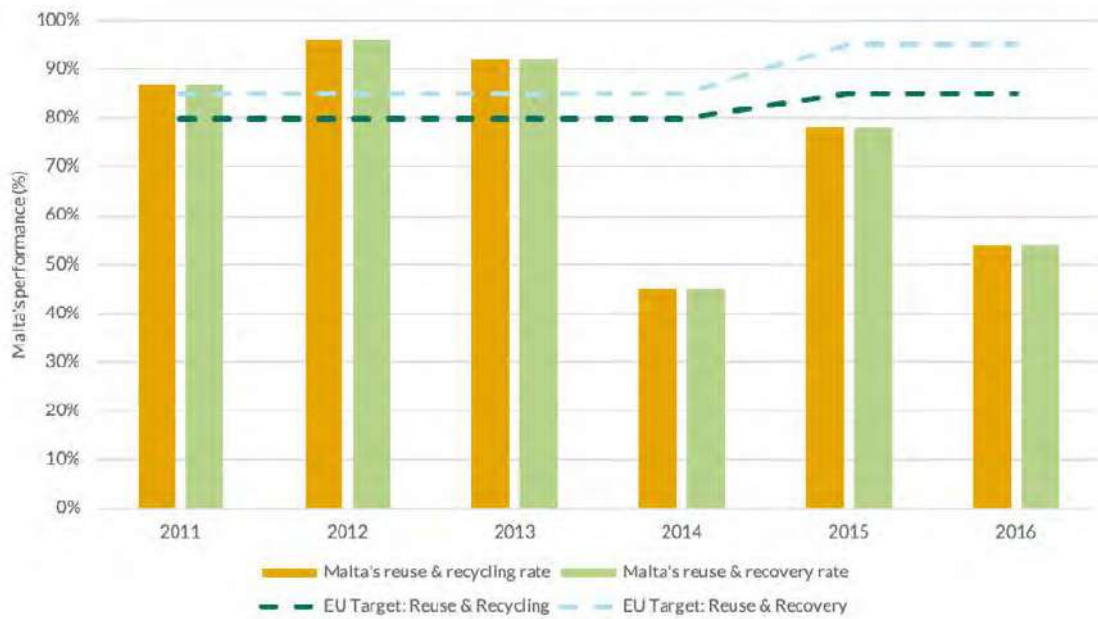


FIGURE 77: ELVs TREATMENT PERFORMANCE COMPARED TO EU TARGETS (2011 - 2016)⁶⁸

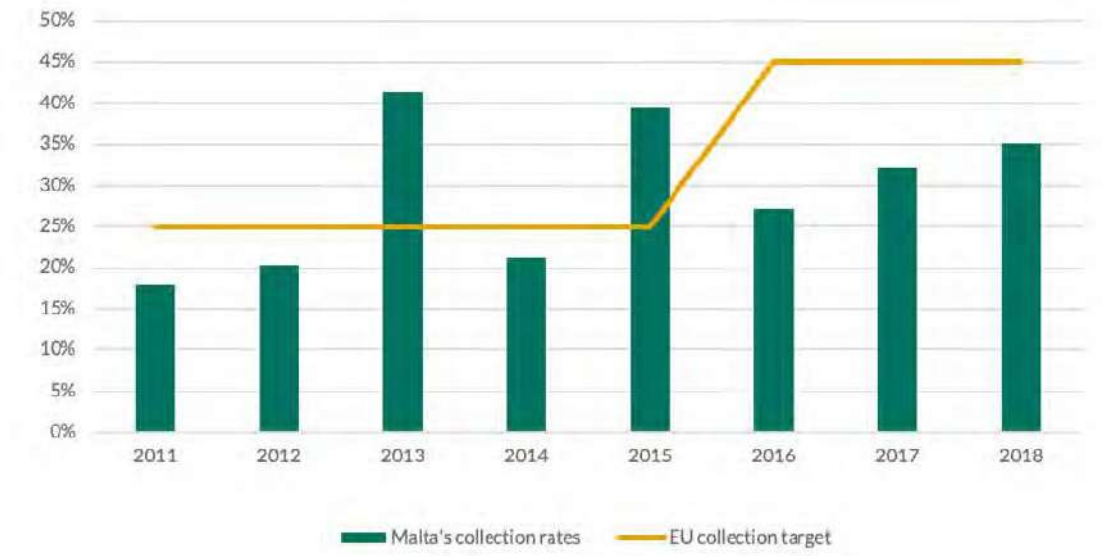


FIGURE 78: BATTERY AND ACCUMULATOR COLLECTION RATES IN RELATION TO EU TARGETS (2011 - 2018)⁶⁸

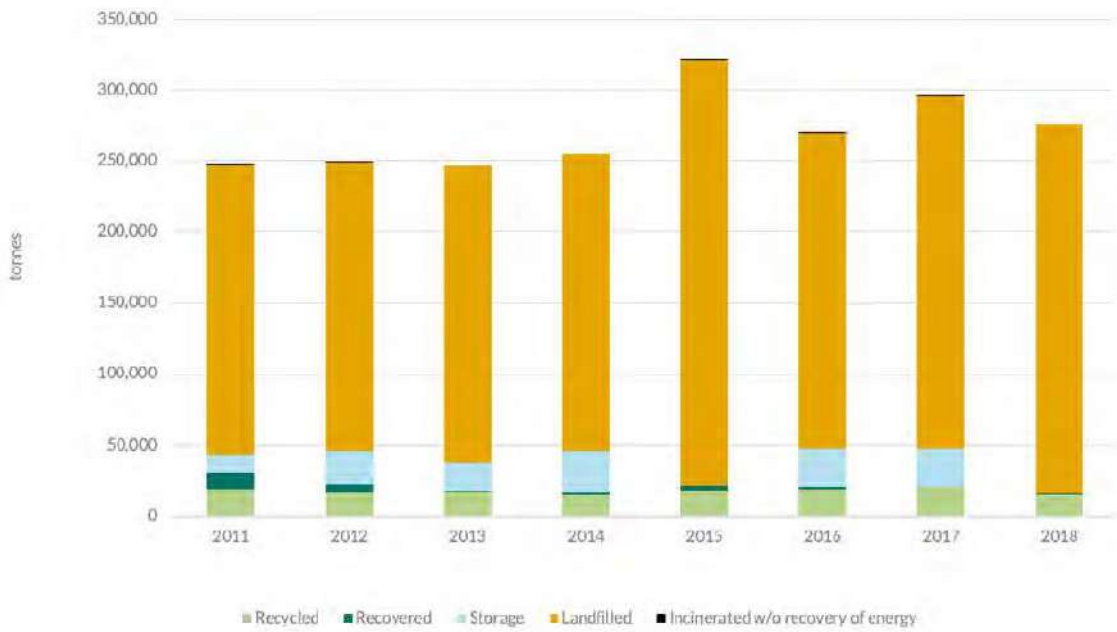


FIGURE 79: MUNICIPAL SOLID WASTE TREATMENT (2011 - 2018)⁶⁸

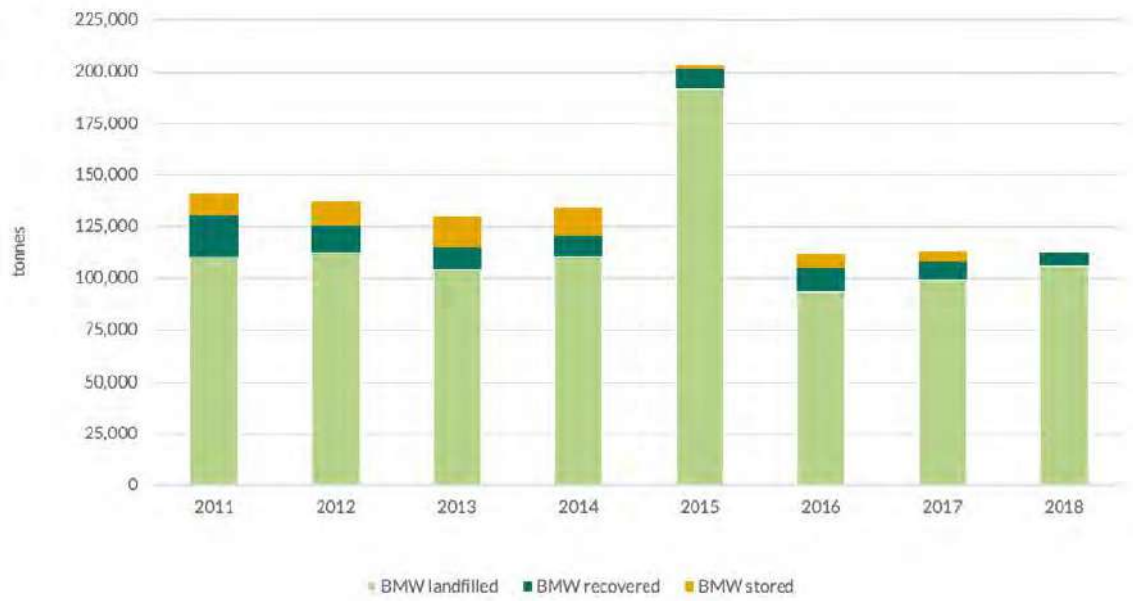


FIGURE 80: TREATMENT OF BIODEGRADABLE MUNICIPAL WASTE (2011 - 2018)⁶⁸

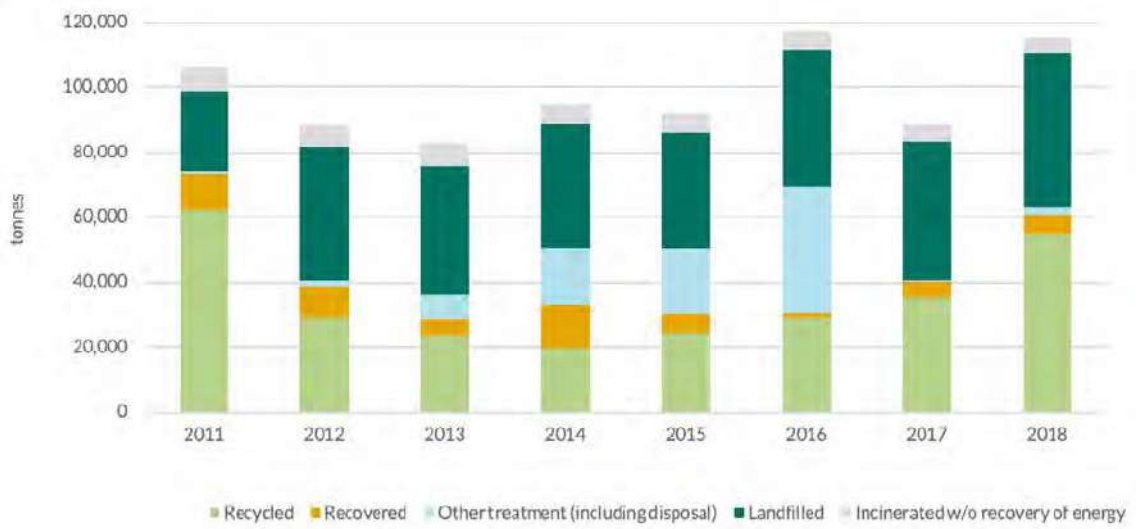


FIGURE 81: COMMERCIAL AND INDUSTRIAL WASTE TREATMENT (2011 - 2018)⁶⁸

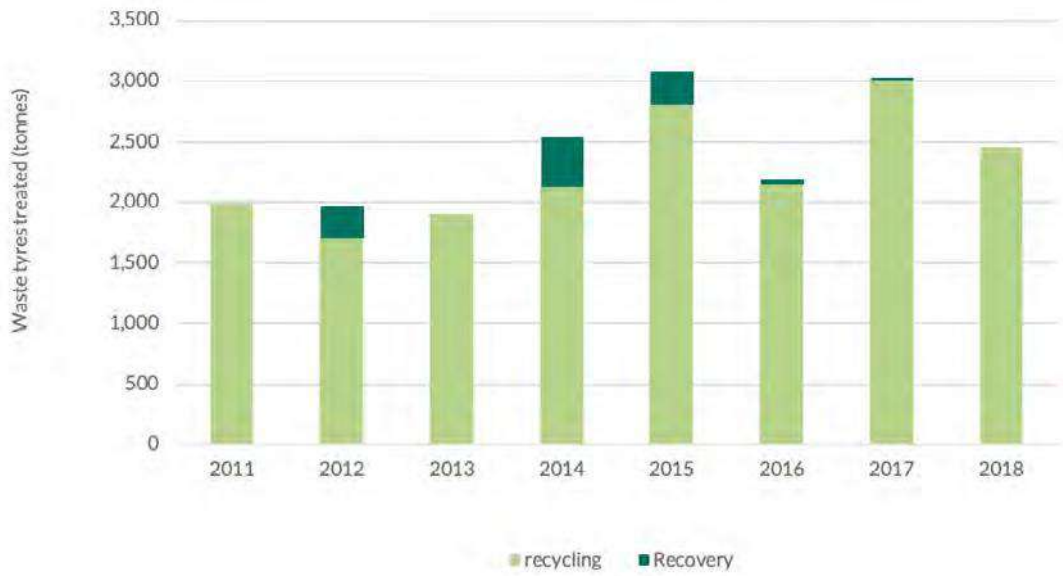


FIGURE 82: TREATMENT OF TYRES (2011 - 2018)⁶⁸

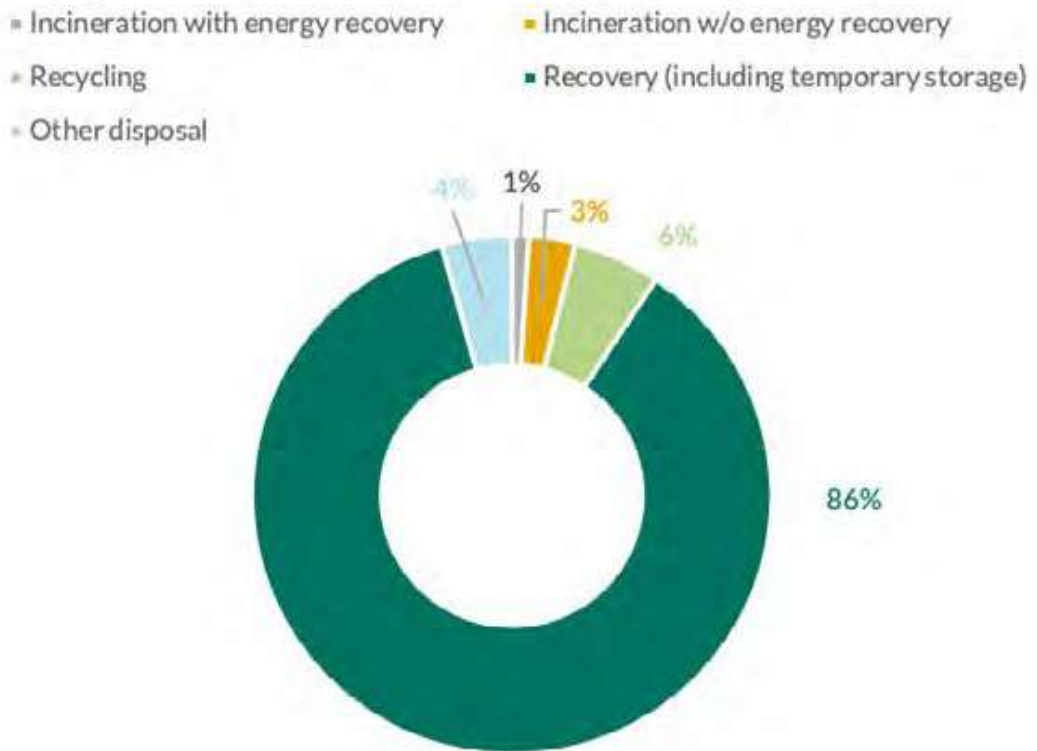


FIGURE 83: TREATMENT OF WASTE OILS (2011 - 2018)⁶⁸



FIGURE 84: TREATMENT OF CONSTRUCTION AND DEMOLITION WASTE (2011 – 2018)⁶⁸

5.8.3 The Sewer System

A total of four sewage treatment plants are present on the Maltese Islands. These include the sewage treatment plants of Ta' Barkat (near Xgħajra), Ċumnija (Mellieħa) and St. Antnin (Marsascala) in Malta and the Ras il-Ħobż sewage treatment plant in Gozo. There is also a total of 104 sewage pumping stations across the Maltese Islands. A total of 67 million litres of sewage is treated locally on a daily basis, amounting to around 24 billion litres of sewage treated in a given year.⁷⁰

Urban wastewater is characterised as wastewater generated from domestic activities or industrial activities as well as surface runoff. Figure 85 shows the urban wastewater generated and treated locally between 2010 and 2019. Urban waste water generation and re-used effluent have remained constant throughout the nine-year period. The trends for treated and untreated urban wastewater discharged into the sea contrast each other. Increases in one attribute are paralleled by decreases in the other attribute and vice versa.⁷¹

⁷⁰ Water Services Corporation. Wastewater. <https://www.wsc.com.mt/about-us/wastewater/>

⁷¹ Water Services Corporation (2019). https://nso.gov.mt/Home/SELECTED_INDICATORS/Documents/Environment.xlsx

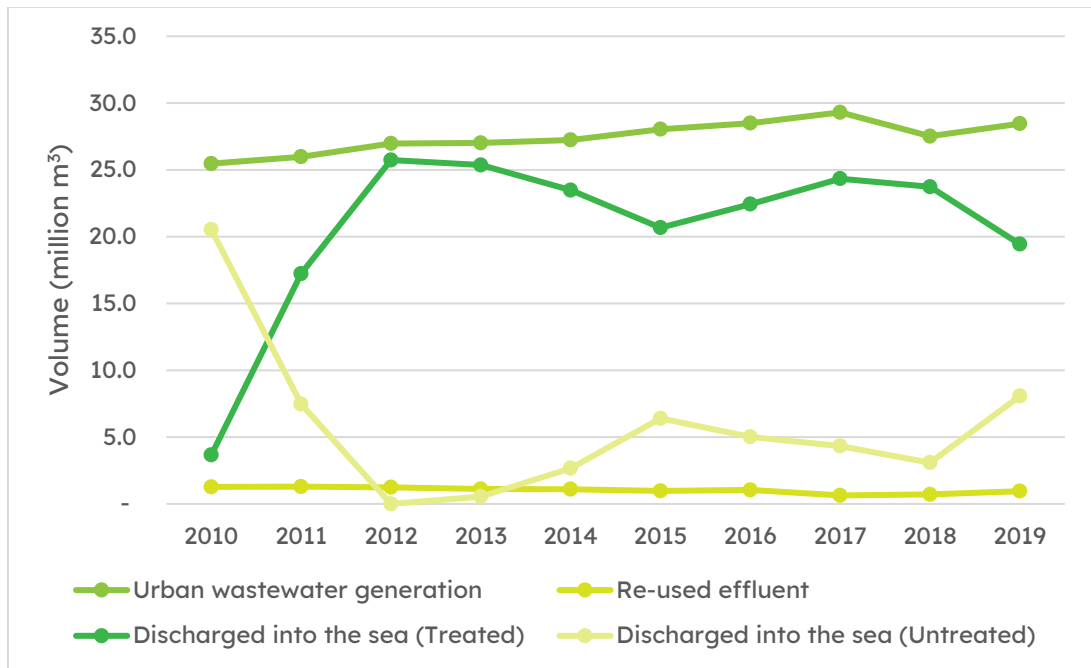


FIGURE 85: URBAN WASTEWATER GENERATION AND TREATMENT⁷¹

6 ALTERNATIVES SCENARIOS

The Draft Programme covers three (3) funds namely the ERDF, CF and JTF. The European Regional Development Fund (ERDF) fund aims to reduce economic, environmental and social disparities and foster green and sustainable socio-economic growth. The Cohesion Fund (CF) provides support for those Member States, such as Malta, that have a gross national income per capita that is lower than 90% of the EU-27 average with a focus on the environment and trans-European networks. The Just Transition Fund (JTF) is one of the three pillars of the Just Transition Mechanism, which aims to ensure a swift transition towards a climate-neutral economy.

The SEA process provides an environmental assessment of three alternative scenarios, as listed hereunder:

- Alternative 0: Zero-option
- Alternative 1: Minimum scenario which satisfies the total financial allocations as per ERDF/CF Regulation and the CPR Regulation
- Alternative 2: As proposed in the ERDF, CF Programmes and the JTF Plan 2021-2027

The zero-option (Alternative 0) represents a theoretical alternative where no funds are allocated under these regulations. This Alternative is purely theoretical since the allocation of funds is required by legislation. This Alternative would mean that there would be no possibility to receive the funds/measures to invest in energy efficient equipment and achieve energy savings through the investments in the interconnector/battery storage to support the electricity grid. Furthermore, in the absence of the ERDF/CF/JTF programme/plan, fewer investments will be made in the environment, such as green infrastructure/Natura 2000 conservation & restoration.

The minimum intervention scenario (Alternative 1) represents a scenario in which the minimum funds are allocated to the environment, as outlined in Table 14.

Alternative 2 assumes full implementation of the policy according to the proposed measures in the draft programme. This Alternative reflects the increased contribution beyond the regulatory requirements and the development of the draft ERDF/CF/JTF Plan. Climate contribution will be 48%, which exceeds the regulatory amount of 37% under for the achievement of climate objectives by 11%.

TABLE 14: SEA ALTERNATIVES

TOTAL FINANCIAL ALLOCATIONS AS PER ERDF/CF REGULATION AND THE CPR REGULATION		PERCENTAGE BUDGETARY ALLOCATIONS		
		ALT 0	ALT 1	ALT 2
Priority 1: Fostering competitiveness and an innovative and smart economic transformation	Thematic Concentration as per ERDF Regulation 2021/1058 Article 6 (c): 25 % allocation of resources to PO 1	0%	25%	26%
Priority 2: Promoting clean and fair energy transition, sustainable wastewater management and green investment;	Thematic Concentration as per ERDF Regulation 2021/1058 Article 6 (c): 30 % allocation of resources to PO 2	0%	30%	41%
	Climate Contribution as per the Common Provisions Regulations 2021/1060 Article 6 (1): 30% under ERDF for the achievement of climate objectives.	0%	30%	31%
Priority 4: Fostering Sustainable Urban Development in Gozo	Allocation for Sustainable Urban Development as per ERDF Regulation 2021/1058 Article 11 (2): 8% for the achievement of Sustainable Urban Development	0%	8%	8%
Priority 5: Promoting sustainable water management, a circular and resource-efficient economy, and sustainable urban mobility	Climate Contribution as per the Common Provisions Regulations 2021/1060 Article 6 (1): 37% under Cohesion Funds for the achievement of climate objectives.	0%	37%	48%

7 IMPACT ASSESSMENT

The Consultants have carried out an impact assessment on the proposed measures in the ERDF, CF Operational Programmes and the JTF Plan 2021-2027, as well as the two alternative scenarios (refer to Section 6 for further details) in accordance with SL 549.61 (the SEA DIRECTIVE). This section presents the results of the assessment.

7.1 ASSESSMENT CRITERIA

The exercise utilised various techniques to assess the significance of each of the identified impacts. Such techniques included the use of expert judgements, the use of thresholds, reference to EU and international legislation as required and consultation with stakeholders. The assessment factors have been classed as follows:

- **Effect:** neutral, adverse and beneficial
- **Probability:** remote, unlikely, possible, likely and certain
- **Duration:** permanent and temporary
- **Frequency:** permanent, regular, frequent, infrequent and rare
- **Reversibility:** reversible and irreversible
- **Cumulative effects:** remote, unlikely, possible, likely and certain
- **Transboundary effects:** remote, unlikely, possible, likely and certain
- **Magnitude:** high, medium and low
- **Spatial extent:** description as applicable
- **Value and vulnerability:** high, medium and low
- **Significance:** described in Table 15

TABLE 15: LEGEND FOR THE IMPACT EFFECT AND SIGNIFICANCE

EFFECT	SIGNIFICANCE	GRADING
Adverse	Major	
	Moderate	
	Minor	
Negligible/No Impact		
Beneficial	Minor	
	Moderate	
	Major	
Unclassified		?

7.2 EFFECT ON ENVIRONMENTAL THEMES

The following subsections outline the effects of the proposed measures (Alternative 2) on each of the environmental themes. The impact assessment results for the other alternatives are discussed in Section 7.2.9.

7.2.1 Air Quality

A multitude of sources generate atmospheric emissions on a daily basis. In Malta, the primary threats to air quality include emissions from internal combustion engines (ICE) in vehicles from road traffic and, to a lesser extent, on ships/vessels. Other sources include waste incineration, rubber tyre wear and road wear. For the purposes of this SEA, air pollution has been assessed in terms of particulate matter, ozone, benzene & VOCs, nitrogen dioxide and sulphur dioxide.

In relation to the ERDF/CF/JTF programme/plan, atmospheric impacts on a national scale primarily depend on the following factors:

- Construction works that release dust and increase heavy vehicle traffic (in turn increasing atmospheric emissions)
- Energy efficiency, an increase of which leads to lower demand (and therefore atmospheric pollutants) on the Delimara power station
- Energy consumption, an increase of which leads to lower demand (and therefore atmospheric pollutants) on the Delimara power station
- Battery support to the energy network, which would facilitate Malta's transition to renewable energy generation
- Presence of plants, an increase of which leads to increased absorption of atmospheric pollutants
- Number of private vehicles, an increase of which increases air quality due to their emission of pollutants
- Number of electrical vehicles, an increase of which improves air quality due to the reduction in ICE emissions
- Shore supply, availability of which reduces emissions from maritime vessels

The extent (or significance) of the impact of each measure on air quality depends on the success/harm of the measure and its ability to affect Malta's air quality on a national scale. The ERDF/CF/JTF programme/plan, focuses on fostering green and sustainable socio-economic growth, improving the environment (with particular attention to the trans-European networks) and helping the country transition towards a climate-neutral economy. Consequently, many of the measures go hand-in-hand with air quality improvement on a national scale, particularly battery systems to facilitate the transition to renewable energy; electricity interconnector project; promoting sustainable multimodal urban mobility; electric vehicle charging points; and shore-to-ship electricity supply.

Conversely, some measures which would necessitate construction works would have a minor localised adverse impact on air quality due to the generation of dust and increase in heavy vehicle traffic in the immediate vicinity. Since the extent and location of these developments are unknown at this stage, the significance of these impacts could vary to some degree. These impacts are nevertheless temporary in duration and no long-term adverse impacts on air quality are envisaged at this stage.

TABLE 16: FINAL ASSESSMENT MATRIX FOR THE MEASURES (AIR QUALITY)

ENVIRONMENTAL THEME: AIR QUALITY		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
	Digitalisation of the Health Sector)	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
SO(iii)	Business Incubation Centre & industrial facilities	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	Beneficial	Possible	Permanent	Permanent	Irreversible	Possible	Remote	Low	Immediate surroundings	Medium		Increased energy efficiency, leading to lower demand on the Delimara power station
SO(ii)	Pilot projects addressing wind renewable energy	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Certain	Medium	National	High		Reduced demand on Delimara power station
SO(iii)	Second Electricity Interconnector	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Certain	Medium	National	High		Reduced demand on Delimara power station
	Investment in energy storage and campaigns	Beneficial	Possible	Permanent	Permanent	Reversible	Likely	Remote	Medium	National	High		Battery support would facilitate transition to renewable energy

ENVIRONMENTAL THEME: AIR QUALITY		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works
SO(vii)	Green Ecological Corridors & Natura 2000 sites	Beneficial	Possible	Permanent	Permanent	Reversible	Remote	Remote	Low	Immediate surroundings	Low		Increased absorption of pollutants by plants
	Restoration of biodiversity through Green Infrastructure & Gardens	Beneficial	Possible	Permanent	Permanent	Reversible	Remote	Remote	Low	Immediate surroundings	Low		Increased absorption of pollutants by plants

Priority 4 ERDF – A more social and inclusive Europe implementing the European Pillar of Social Rights

SO(ii)	Investments in education facilities	Adverse	Possible	Permanent	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increase in traffic
	Investment in VET education facilities	Adverse	Possible	Permanent	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increase in traffic
SO(v)	Developing an acute mental health hospital	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works; Increase in traffic
	Investment in a facility for paediatric rehabilitation services	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works; Increase in traffic
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality
	Investing in youth rehabilitation	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works; Increase in traffic
	Investing in specialised recreational facilities for persons with disability or illness	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works; Increase in traffic
SO(vi)	Enhancing and valorising Malta Tourism Product	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality

Priority 5 ERDF – A Europe closer to citizens by fostering the sustainable and integrated development of all type of territories and local initiatives

ENVIRONMENTAL THEME: AIR QUALITY		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Likely	Permanent	Permanent	Irreversible	Possible	Remote	Medium	National	High		Reduced atmospheric emissions
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works
SO(viii)	Investing in sustainable multimodal urban mobility	Beneficial	Possible	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	High		Reduced number of private vehicles emitting pollutants
	Shift towards the use of alternative fuels in road transport	Beneficial	Possible	Permanent	Frequent	Reversible	Possible	Remote	Medium	Immediate surroundings	Medium		Reduced traffic emissions
Priority 3 CF - A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Beneficial	Likely	Permanent	Permanent	Irreversible	Possible	Remote	Medium	National	High		Reduced traffic emissions
	Investment in the Ten-T ports	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Dust & traffic from construction works
Priority 6: Just Transition													
SO(i)	Provision of onshore power supply	Beneficial	Likely	Permanent	Frequent	Reversible	Possible	Remote	Medium	Immediate surroundings	Medium		Reduced vessel emissions
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on air quality

7.2.2 Biodiversity

Biodiversity comprises all living native organisms and the diverse habitats in which they inhabit, and is also considered to be the natural heritage of that area/country. Threats to biodiversity generally include land take-up which cause direct loss of species and habitats and indirect impacts such as trampling, settlement of dust on habitats and dispersion of pollutants via land, water and air. For the purposes of this SEA, biodiversity has been assessed in terms of the statuses of local protected habitats & species, other habitats (valleys and watercourses) and environmental factors (coastal water, groundwater, geology and soil).

The extent of biodiversity impacts arising from the ERDF/CF/JTF programme/plan measures primarily depends on the following factors:

- Damage/loss of benthic habitats and species due to take up of virgin/agricultural land and/or seabed
- Overflow/leakages from wastewater system which harm marine ecology
- Availability of native species which could be introduced into Natura 2000 sites to improve the ecological status of these habitats
- Presence of plants in urban areas which encourage pollination and improve ecological links between different habitats
- Presence of physical links between different areas of high ecological importance such as Natura 2000 sites

The extent (or significance) of the impact of each measure on biodiversity depends on the success/harm of the measure and its ability to affect Malta's biodiversity on a national scale. Most of the measures have a negligible or unknown effect on Malta's biodiversity, particularly ERDF Priorities 1, 4 and 5, as well as the CF Programme and JTF Plan. The unknown impacts are mostly related to those measures that are expected to involve construction works; if the development takes up already-developed land, the impacts would be much smaller than if it replaces virgin land, agricultural land or areas with protected habitats/species.

TABLE 17: FINAL ASSESSMENT MATRIX FOR THE MEASURES (BIODIVERSITY)

ENVIRONMENTAL THEME: BIODIVERSITY		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF - A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
	Digitalisation of the Health Sector	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
SO(iii)	Business Incubation Centre & industrial facilities	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
SO(ii)	Pilot projects addressing wind renewable energy	Adverse	Certain	Permanent	Permanent	Irreversible	Likely	Certain	Medium	Immediate surroundings	High		Loss of benthic marine habitats and species including avifauna
SO(iii)	Second Electricity Interconnector	Adverse	Certain	Permanent	Permanent	Irreversible	Likely	Certain	Medium	Immediate surroundings	High		Loss of benthic habitats and species within a corridor along cable path
	Investment in energy storage and campaigns	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location

ENVIRONMENTAL THEME: BIODIVERSITY		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	Beneficial	Likely	Permanent	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Reduced leaks from wastewater system which harms marine ecology
SO(vii)	Green Ecological Corridors & Natura 2000 sites	Beneficial	Likely	Permanent	Permanent	Reversible	Remote	Remote	High	National	High		Improved links between different areas of high ecological importance
	Restoration of biodiversity through Green Infrastructure & Gardens	Beneficial	Likely	Permanent	Permanent	Reversible	Remote	Remote	Low	National	Low		Presence of plants in urban areas to encourage pollination

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SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
	Investment in VET education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
SO(v)	Developing an acute mental health hospital	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investment in a facility for paediatric rehabilitation services	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
	Investment in preventive health measures	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investing in youth rehabilitation	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investing in specialised recreational facilities for persons with disability or illness	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
SO(vi)	Enhancing and valorising Malta's tourism product	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity

Priority 5 ERDF - A Europe closer to citizens by fostering the sustainable and integrated development of all type of territories and local initiatives

ENVIRONMENTAL THEME: BIODIVERSITY		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Likely	Permanent	Permanent	Reversible	Possible	Remote	Minor	National	Low		Sustainable practices lead to a reduction in direct/indirect adverse impacts on biodiversity
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Adverse	Possible	Temporary	Irregular	Reversible	Possible	Remote	Minor	Surrounding areas	Low		Overspill of impacts from the construction works in the ECOHIVE Complex to nearby agricultural land
SO(viii)	Investing in sustainable multimodal urban mobility	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Shift towards the use of alternative fuels in transport	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity
Priority 3 CF – A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Investment in the Ten-T ports	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
Priority 6 – Just Transition													
SO(i)	Provision of onshore power supply	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on biodiversity

7.2.3 Land Uses and Landscape

Land uses describe the human use of land, designating activities such as agricultural, residential, industrial, and recreational uses that are practiced in a given area. For the purposes of this SEA, land uses will also include sea uses. Landscape is defined by the EUROPEAN LANDSCAPE CONVENTION as “*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*”.³¹ Landscape does not only comprise visual aspects of the environment, but also includes the character of an area perceived through the remaining four senses. For the purposes of this SEA, landscape has been assessed from a visual perspective, in terms of the status of landform and topography, landscape, the natural beauty and scenic amenity of the landscape.

Land uses and landscape impacts of the ERDF/CF/JTF programme/plan on a national scale primarily depend on the following factors:

- Take-up of virgin/agricultural land and/or seabed
- Landscape quality, an increase of which could be due to improved visual amenity
- Presence of physical links between different areas of high ecological importance such as Natura 2000 sites
- Land use quality as from rehabilitation and use of existing scheduled buildings

Impacts on land use largely relate to construction works which produce a change in activities. The extent (or significance) of impacts depends on the location of these works, the area taken up by the developments and/or maritime activities, as well as the nature of the land use change. Most of the measures have a negligible or unknown effect on Malta’s land use and landscape, particularly ERDF Priorities 1, 4 and 5, as well as the CF Programme and JTF Plan. The unknown impacts are mostly related to those measures that are expected to involve construction works; if the development takes up already-developed land, the impacts would be much smaller than if it replaces virgin or agricultural land. In addition to the permanent change in land use and landscape of developments, the works themselves also introduce minor impacts on landscape due to the physical presence of machinery; these impacts are nevertheless temporary in duration.

TABLE 18: FINAL ASSESSMENT MATRIX FOR THE MEASURES (LAND USES AND LANDSCAPE)

ENVIRONMENTAL THEME: LAND USES AND LANDSCAPE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF - A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
	Digitalisation of the Health Sector	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
SO(iii)	Business Incubation Centre & industrial facilities	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
SO(ii)	Pilot projects addressing wind renewable energy	Adverse	Certain	Permanent	Permanent	Irreversible	Likely	Certain	Medium	Immediate surroundings	High		Change in land use/sea uses with potential impacts on biodiversity

ENVIRONMENTAL THEME: LAND USES AND LANDSCAPE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(iii)	Second Electricity Interconnector	Adverse	Certain	Permanent	Permanent	Irreversible	Likely	Certain	Medium	Immediate surroundings	High		Loss of benthic habitats and species within a corridor along cable path
	Investment in energy storage and campaigns	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
SO(vii)	Green Ecological Corridors & Natura 2000 sites	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Remote	High	National	High		Improved links between different areas of high ecological importance & landscape quality
	Restoration of biodiversity through Green Infrastructure & Gardens	Beneficial	Likely	Permanent	Permanent	Reversible	Remote	Remote	Low	National	Low		Improved landscape quality
Priority 4 ERDF – A more social and inclusive Europe implementing the European Pillar of Social Rights													
SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
	Investment in VET education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
a	Developing an acute mental health hospital	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investment in a facility for paediatric rehabilitation services	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location

ENVIRONMENTAL THEME: LAND USES AND LANDSCAPE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
	Investing in youth rehabilitation	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investing in specialised recreational facilities for persons with disability or illness	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
SO(vi)	Enhancing and valorising Malta's tourism product	Beneficial	Likely	Permanent	Permanent	Irreversible	Remote	Remote	Low	National	Low		Improved land use as from rehabilitation and use of scheduled buildings
Priority 5 ERDF – A Europe closer to citizens by fostering the sustainable and integrated development of all type of territories and local initiatives													
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Likely	Permanent	Permanent	Irreversible	Remote	Remote	Low	National	Low		Improved land use from rehabilitation of the environment
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Adverse	Likely	Permanent	Permanent	Irreversible	Likely	Remote	Medium	National	Medium		Take-up of agricultural land

ENVIRONMENTAL THEME: LAND USES AND LANDSCAPE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(viii)	Investing in sustainable multimodal urban mobility	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Shift towards the use of alternative fuels in transport	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape
Priority 3 CF – A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Investment in the Ten-T ports	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
Priority 6 – Just Transition													
SO(i)	Provision of onshore power supply	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape

7.2.4 Cultural Heritage

Cultural heritage is defined as the “*legacy of physical artefacts and intangible attributes of a group or society that is inherited from past generations*”.³⁵ Threats to cultural heritage generally include land or sea take-up which may uncover and potentially damage unknown cultural heritage features, along with accidental damage to known features on land or at sea. For the purposes of this SEA, cultural heritage has been defined in terms of the number and status of scheduled sites on land and at sea.

The extent of cultural heritage impacts primarily depends on the following factors:

- Impact type such as excavation or dredging which could uncover and potentially damage unknown archaeological features;
- Location of the works, particularly relating to the likelihood of archaeological discoveries;
- Cultural importance of the features present, both known and unknown, and their designation by law; and
- The physical distance between the impact source and the cultural heritage receptor.

Reducing the extent of the impacts on cultural heritage can be achieved by limiting the extent of land/seabed take-up, limiting the impact duration and maximising the distance of the receptor (i.e. known or unknown cultural heritage features) from the impact source. Most of the measures have a negligible or unknown effect on Malta’s cultural heritage, particularly ERDF Priorities 1, 4 and 5, as well as the CF Programme and JTF Plan. The unknown impacts relate to those measures that are expected to involve construction works that could damage known or unknown cultural heritage features. Impacts on cultural heritage could materialise if the developments involve excavation or dredging works which could damage unknown archaeological features. The extent of the impact depends on the location (with some localities having a higher probability of archaeological features) and the size of the development.

TABLE 19: FINAL ASSESSMENT MATRIX FOR THE MEASURES (CULTURAL HERITAGE)

ENVIRONMENTAL THEME: CULTURAL HERITAGE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF - A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Digitalisation of the Health Sector	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
SO(iii)	Business Incubation Centre & industrial facilities	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
SO(ii)	Pilot projects addressing wind renewable energy	Adverse	Possible	Permanent	Permanent	Irreversible	Likely	Possible	Medium	Immediate surroundings	Medium		Potential damage to underwater cultural heritage features during works
SO(iii)	Second Electricity Interconnector	Adverse	Possible	Permanent	Permanent	Irreversible	Likely	Possible	Medium	Immediate surroundings	Medium		Potential damage to underwater cultural heritage features during works
	Investment in energy storage and campaigns	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location

ENVIRONMENTAL THEME: CULTURAL HERITAGE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
SO(vii)	Green Ecological Corridors & Natura 2000 sites	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Restoration of biodiversity through Green Infrastructure & Gardens	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
Priority 4 ERDF – A more social and inclusive Europe implementing the European Pillar of Social Rights													
SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Investment in VET education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
SO(v)	Developing an acute mental health hospital	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investment in a facility for paediatric rehabilitation services	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
	Investing in youth rehabilitation	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
	Investing in specialised recreational facilities for persons with disability or illness	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location
SO(vi)	Enhancing and valorising Malta's tourism product	Beneficial	Certain	Permanent	Permanent	Irreversible	Remote	Remote	Moderate	National	High		Rehabilitation of dilapidated cultural heritage features
Priority 5 ERDF – A Europe closer to citizens by fostering the sustainable and integrated development of all type of territories and local initiatives													
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Certain	Permanent	Permanent	Irreversible	Remote	Remote	Moderate	National	High		Rehabilitation of dilapidated cultural heritage features

ENVIRONMENTAL THEME: CULTURAL HERITAGE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Adverse	Likely	Permanent	Permanent	Irreversible	Likely	Remote	Low	Immediate surroundings	Low		Potential damage to unknown cultural heritage features during works
SO(viii)	Investing in sustainable multimodal urban mobility	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Shift towards the use of alternative fuels in transport	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on cultural heritage
Priority 3 CF - A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Investment in the Ten-T ports	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
Priority 6 - Just transition													
SO(i)	Provision of onshore power supply	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on land uses and landscape

7.2.5 Energy and Water Consumption

For the purposes of this SEA, energy & water has been defined in terms of electricity consumption, fuel consumption, security of supply and water consumption.

As of 2020, electricity in Malta mostly originates from two sources: local power plants (73.6%) and imports (16.7%); and only 9.7% of Malta's energy originates from renewable sources.⁴⁷ Security of electrical supply is generally quantified through the amount of different energy types and sources in the "energy mix" used to deliver energy; the larger the energy mix, the more contingencies are in place in case of failure of one of the systems. Fuel is primarily consumed in Malta to power internal combustion engines (ICE), generate electricity and to power various gas-powered household appliances and industrial machines.

Malta's mains water originates from two sources: desalination of seawater via reverse osmosis and groundwater extraction.⁵⁷ Water obtained from such systems is pumped and distributed through a series of underground tunnels and pipes. Some of this water is lost through leakages in the water mains. The quantity of water leakages has decreased in recent years as a result of a leakage reduction program implemented by the WSC.

Impacts to Malta's energy and water relevant to the ERDF/CF/JTF programme/plan primarily depend on the following factors:

- Electricity demand which exerts a load on the Delimara power station, producing additional atmospheric emissions;
- Proportion of national electricity produced from renewable sources, an increase of which reduces the demand on the Delimara power station;
- Electricity efficiency of a given system (including mains water), an increase of which reduces the demand on the Delimara power station;
- Quantity of waste incinerated, which generates electricity and reduces the demand on the Delimara power station; and
- Quantity of water lost through leakages of the water and wastewater mains.

The extent (or significance) of the impact of each measure on biodiversity depends on the success/harm of the measure and its ability to affect Malta's energy and water management systems on a national scale, as well as the amount and type of fuel used. Measures which reduce the electricity and water demand would reduce the pressure on Malta's electricity grid and water system, respectively. Such measures include the equipment for energy savings in industry; battery storage systems to enable transition to renewable energy; electricity interconnector project; protecting resource of wastewater; upgrades to wastewater treatment plant; organic processing plant; optimising water distribution facilities; and promoting sustainable multimodal urban mobility.

TABLE 20: FINAL ASSESSMENT MATRIX FOR THE MEASURES (ENERGY AND WATER CONSUMPTION)

ENVIRONMENTAL THEME: ENERGY AND WATER CONSUMPTION		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 - A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Digitalisation of the Health Sector	Beneficial	Possible	Permanent	Permanent	Reversible	Remote	Remote	Low	National	Low		Improved monitoring of energy and water systems
SO(iii)	Business Incubation Centre & industrial facilities	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	Beneficial	Likely	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	Medium		Lower energy consumption
SO(ii)	Pilot projects addressing wind renewable energy	Beneficial	Likely	Permanent	Permanent	Irreversible	Certain	Remote	High	National	Medium		Lower demand on the Delimara power station
SO(iii)	Second Electricity Interconnector	Beneficial	Likely	Permanent	Permanent	Irreversible	Certain	Remote	High	National	Medium		Lower demand on the Delimara power station
	Investment in energy storage and promotional campaigns	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Remote	High	National	High		Increased capacity for integration of renewable energy

ENVIRONMENTAL THEME: ENERGY AND WATER CONSUMPTION		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	Beneficial	Possible	Permanent	Permanent	Reversible	Likely	Remote	Medium	National	High		Fewer wastewater system leaks and increased wastewater system capacity
SO(vii)	Green Ecological Corridors & Natura 2000 sites	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Restoration of biodiversity through Green Infrastructure & Gardens	Beneficial	Likely	Permanent	Frequent	Reversible	Likely	Remote	Low	National	Low		Lower water consumption

Priority 4 ERDF – A more social and inclusive Europe implementing the European Pillar of Social Rights

SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Investment in VET education facilities	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
SO(v)	Developing an acute mental health hospital	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
	Investment in a facility for paediatric rehabilitation services	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption
	Investing in youth rehabilitation	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
SO(vi)	Investing in specialised recreational facilities for persons with disability or illness	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
	Enhancing and valorising Malta's tourism product	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption

Priority 5 - Fostering sustainable urban development in Gozo

ENVIRONMENTAL THEME: ENERGY AND WATER CONSUMPTION		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Remote	High	National	High		Lower demand on the Delimara power station Increased capacity for integration of renewable energy
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	Beneficial	Possible	Permanent	Permanent	Reversible	Likely	Remote	High	National	High		Reduced leakages from water distribution system
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Beneficial	Likely	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	Medium		Renewable energy generation from OPP
SO(viii)	Investing in sustainable multimodal urban mobility	Beneficial	Likely	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	Medium		Reduced fuel consumption
	Shift towards the use of alternative fuels in transport	Beneficial	Possible	Permanent	Frequent	Irreversible	Likely	Remote	High	National	Medium		Increased use of alternative fuels
Priority 3 CF - A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
	Investment in the Ten-T ports	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased energy & water consumption due to works
Priority 6 - Just Transition													
SO(i)	Provision of onshore power supply	Beneficial	Likely	Permanent	Permanent	Irreversible	Likely	Remote	Medium	National	Medium		Reduced vessel fuel consumption
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on energy & water consumption

7.2.6 Climate Change

Climate change is a process whereby greenhouse gases, produced by both natural and anthropogenic activities, trap heat radiating from the Earth's surface and raise global temperatures. Human contribution to climate change often goes hand-in-hand with the threats to air quality, namely emissions from fuel combustion from power plants and ICE in vehicles and on ships/vessels. For the purposes of this SEA, climate change has been assessed in relation to national GHG emissions and their proportional contribution to climate change in Malta.

Climate change impacts on a national scale relevant to the ERDF/CF/JTF programme/plan primarily depend on the following factors:

- Electricity demand which exerts a load on the Delimara power station, producing additional GHG emissions;
- Proportion of national electricity produced from renewable sources, an increase of which reduces the demand on the Delimara power station;
- Electricity efficiency, an increase of which reduces the demand on the Delimara power station; and
- Number of active vehicles/vessels generating atmospheric emissions.

The extent (or significance) of the impact of each measure on climate change depends on the success/harm of the measure and its contribution to Malta's national GHG emissions. Measures that reduce the electricity demand would reduce the load on the Delimara power station, and in so doing reduce Malta's contribution to climate change. Such measures may include the equipment for energy savings in industry; battery storage systems to enable transition to renewable energy; electricity interconnector project; organic processing plant; and promoting sustainable multimodal urban mobility.

Despite that construction works are expected to have an adverse effect on climate change due to increased heavy vehicle traffic, this effect on climate change is temporary and overall minimal. Consequently, measures whose long-term operation would reduce greenhouse gas emissions (such as the battery storage systems, organic processing plant and electricity interconnector network) are considered to have an overall beneficial effect on climate change.

TABLE 21: FINAL ASSESSMENT MATRIX FOR THE MEASURES (CLIMATE CHANGE)

ENVIRONMENTAL THEME: CLIMATE CHANGE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
	Digitalisation of the Health Sector	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
SO(iii)	Business Incubation Centre & industrial facilities	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased GHG emissions from works
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	Beneficial	Likely	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	Medium		Lower demand on the Delimara power station
SO(ii)	Pilot projects addressing wind renewable energy	Beneficial	Likely	Permanent	Permanent	Irreversible	Certain	Remote	High	National	Medium		Lower demand on the Delimara power station
SO(iii)	Second Electricity Interconnector	Beneficial	Likely	Permanent	Permanent	Irreversible	Certain	Remote	High	National	Medium		Lower demand on the Delimara power station
	Investment in energy storage and campaigns	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Remote	High	National	High		Increased capacity for integration of renewable energy

ENVIRONMENTAL THEME: CLIMATE CHANGE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
SO(vii)	Green Ecological Corridors & Natura 2000 sites	Beneficial	Likely	Permanent	Frequent	Reversible	Likely	Remote	Low	National	High		Increased absorption of GHGs & sun energy
	Restoration of biodiversity through Green Infrastructure & Gardens	Beneficial	Likely	Permanent	Frequent	Reversible	Likely	Remote	Low	National	Low		Increased absorption of GHGs & sun energy

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SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
	Investment in VET education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
SO(v)	Developing an acute mental health hospital	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased GHG emissions from works
	Investment in a facility for paediatric rehabilitation services	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased GHG emissions from works
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
	Investing in youth rehabilitation	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased GHG emissions from works
	Investing in specialised recreational facilities for persons with disability or illness	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased GHG emissions from works
SO(vi)	Enhancing and valorising Malta's tourism product	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change

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ENVIRONMENTAL THEME: CLIMATE CHANGE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Likely	Permanent	Permanent	Irreversible	Certain	Remote	High	National	High		Lower demand on the Delimara power station Increased capacity for integration of renewable energy
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on balance between reduced demand on Delimara power station and increased GHG emissions
SO(viii)	Investing in sustainable multimodal urban mobility	Beneficial	Possible	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	High		Reduced number of private vehicles emitting GHGs
	Shift towards the use of alternative fuels in transport	Beneficial	Possible	Permanent	Frequent	Reversible	Possible	Remote	Medium	National	Medium		Reduced number of private vehicles emitting GHGs
Priority 3 CF - A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Beneficial	Likely	Permanent	Permanent	Irreversible	Likely	Remote	Medium	National	Medium		Reduced vehicular GHG emissions
	Investment in the Ten-T ports	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased GHG emissions from works
Priority 6 - Facilitating a just transition													
SO(i)	Provision of onshore power supply	Beneficial	Likely	Permanent	Permanent	Irreversible	Likely	Remote	Medium	National	Medium		Reduced vessel GHG emissions
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on climate change

7.2.7 Transport and Related Infrastructure

Malta's population is heavily reliant on motor vehicles for transportation, with an approximate increase of 54 vehicles per day licensed in Q4 of 2021.⁶³ The number of users of electric/hybrid vehicles and alternative/public modes of transport have nevertheless shown a steady increase in recent years. For the purposes of this SEA, vehicles by type, bicycle & e-bicycle usage and public transport usage have been used as indicators.

Impacts on transport on a national scale relevant to the ERDF/CF/JTF programme/plan primarily depend on the following factors:

- Traffic generated by heavy vehicles and/or work vessels during construction works;
- Proportions of active ICE vehicles/vessels and electric/hybrid vehicles; and
- Usage of alternative modes of transport such as bicycles, e-bicycles or public transport.

The extent (or significance) of the impact of each measure on transport depends on the success/harm of the measure and its ability to affect Malta's land and/or maritime transportation on a national scale. Measures that reduce vehicular and/or maritime traffic, increase the efficiency of vehicle/vessel engines, and encourage the use of alternative modes of transport serve as positive impacts on transport. Such measures include the improved TEN-T road network and the promotion of sustainable multimodal urban mobility. Minor negative impacts would likely arise from the implementation of measures that involve construction works, since these works would increase heavy vehicle traffic and add pressure on the road network. These impacts are nevertheless temporary in duration.

TABLE 22: FINAL ASSESSMENT MATRIX FOR THE MEASURES (TRANSPORT & RELATED INFRASTRUCTURE)

ENVIRONMENTAL THEME: TRANSPORT & RELATED INFRASTRUCTURE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Digitalisation of the Health Sector	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
SO(iii)	Business Incubation Centre & industrial facilities	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
SO(ii)	Pilot projects addressing wind renewable energy	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Medium	National	Low		Increased vehicular and vessel traffic from works
SO(iii)	Second Electricity Interconnector	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Medium	National	Low		Increased vehicular and vessel traffic from works
	Investment in energy storage and campaigns	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works

ENVIRONMENTAL THEME: TRANSPORT & RELATED INFRASTRUCTURE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
SO(vii)	Green Ecological Corridors & Natura 2000 sites	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Restoration of biodiversity through Green Infrastructure & Gardens	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
Priority 4 ERDF – A more social and inclusive Europe implementing the European Pillar of Social Rights													
SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Investment in VET education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
SO(v)	Developing an acute mental health hospital	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works
	Investment in a facility for paediatric rehabilitation services	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Investing in youth rehabilitation	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works
	Investing in specialised recreational facilities for persons with disability or illness	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works
SO(vi)	Enhancing and valorising Malta's tourism product	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure

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ENVIRONMENTAL THEME: TRANSPORT & RELATED INFRASTRUCTURE		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(i)	Improving the environment and shifting towards a climate neutral economy	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Optimising water distribution facilities and ensuring water supply security	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented
SO(vi)	Development of an Organic Processing Plant	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Increased traffic from works
SO(viii)	Investing in sustainable multimodal urban mobility	Beneficial	Likely	Permanent	Permanent	Irreversible	Likely	Remote	High	National	High		Improved sustainability of transport system
	Shift towards the use of alternative fuels in transport	Beneficial	Likely	Permanent	Permanent	Irreversible	Likely	Remote	Low	National	Medium		Improved transport system
Priority 3 CF - A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Beneficial	Likely	Permanent	Frequent	Reversible	Likely	Remote	Medium	National	Low		Shift towards alternative modes of transport
	Investment in the Ten-T ports	Beneficial	Likely	Permanent	Frequent	Reversible	Likely	Remote	Low	National	Low		Improved maritime transport systems
Priority 6 - Just Transition													
SO(i)	Provision of onshore power supply	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on transport & related infrastructure

7.2.8 Waste Management

Waste generation represents a loss of resources, and the management of waste places pressure on the environment in terms of air, water quality and land take-up. For the purposes of this SEA, the quantity of waste generated by type and the proportion of waste separation and recycling have been used as indicators.

Impacts on waste management on a national scale relevant to the ERDF/CF/JTF programme/plan primarily depend on the following factors:

- Waste generation and recovery;
- Waste incineration which reuses material for electricity generation;
- Efficiency of the national water supply system, an increase of which causes a reduction in reject water; and
- Generation of C&D waste from construction sites.

The extent (or significance) of the impact of each measure depends on the success/harm of the measure and its ability to affect Malta's waste system on a national scale. Measures that push Malta towards a more circular economy, through the reduction in raw material input and/or reduction in waste generated, constitute positive impacts on waste management. Such measures include Invest in the wastewater collection network and wastewater treatment plants; upgrading the wastewater treatment plant; developing an organic processing plant; and optimising water distribution facilities to reduce leaks. Measures that involve construction works would likely result in demolition, excavation and/or dredging waste that would need to be disposed; this constitutes a negative impact on waste management.

Additionally, the batteries used in the proposed energy storage system would eventually need to be replaced, therefore it is being suggested that the adequate infrastructure to mitigate the recycling of such a waste stream would be adequately in place.

TABLE 23: FINAL ASSESSMENT MATRIX FOR THE MEASURES (WASTE MANAGEMENT)

ENVIRONMENTAL THEME: WASTE MANAGEMENT		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 1 ERDF – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT Connectivity													
SO(i)	Public sector investment in research and innovation (R&I)	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
	Supporting private sector investment in R&I	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on research outcomes and ultimate use
SO(ii)	Supporting digitalisation in economic sectors	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Digitalisation of public administration and entities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Digitalisation of the Health Sector	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
SO(iii)	Business Incubation Centre & industrial facilities	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
	Grants for the private sector to stimulate start-ups and enhance business growth	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Increasing access to finance through Financial Instruments	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
Priority 2 ERDF - Promoting clean and fair energy transition, sustainable wastewater management and green investment													
SO(i)	Financial instruments to support industry and households to invest in energy efficiency	Adverse	Possible	Permanent	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		Generation of WEEE
SO(ii)	Pilot projects addressing wind renewable energy	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Medium	Immediate surroundings	Medium		C&D waste generation from works; WEEE from end-of life
SO(iii)	Second Electricity Interconnector	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Medium	Immediate surroundings	Medium		C&D waste generation from works
	Investment in energy storage and promotional campaigns	Adverse	Possible	Permanent	Infrequent	Reversible	Possible	Remote	Medium	Immediate surroundings	Medium		Generation of WEEE

ENVIRONMENTAL THEME: WASTE MANAGEMENT		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
SO(v)	Invest in the wastewater collection network and wastewater treatment plants	Beneficial	Possible	Permanent	Permanent	Reversible	Likely	Remote	Medium	National	High		Fewer wastewater system leaks and increased wastewater system capacity
SO(vii)	Green Ecological Corridors & Natura 2000 sites	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Restoration of biodiversity through Green Infrastructure & Gardens	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
Priority 4 ERDF – A more social and inclusive Europe implementing the European Pillar of Social Rights													
SO(ii)	Investments in education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Investment in VET education facilities	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
SO(v)	Developing an acute mental health hospital	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
	Investment in a facility for paediatric rehabilitation services	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
	Investment in the resilience of the public healthcare system	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Investment in preventive health measures	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
	Investing in youth rehabilitation	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
SO(vi)	Investing in specialised recreational facilities for persons with disability or illness	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
	Enhancing and valorising Malta's tourism product	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
Priority 5 ERDF – A Europe closer to citizens by fostering the sustainable and integrated development of all type of territories and local initiatives													
SO(i)	Improving the environment and shifting towards a climate neutral economy	Beneficial	Possible	Permanent	Permanent	Reversible	Likely	Remote	Medium	National	Medium		Improved waste management practices
	Protecting and promoting Gozo's characteristics to foster Gozo's socio-economic fabric	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the type of initiatives implemented

ENVIRONMENTAL THEME: WASTE MANAGEMENT		EFFECT	PROBABILITY	DURATION	FREQUENCY	REVERSIBILITY	CUMULATIVE EFFECTS	TRANSBOUNDARY EFFECTS	MAGNITUDE	SPATIAL EXTENT	VALUE AND VULNERABILITY	SIGNIFICANCE	JUSTIFICATION
Priority 2 CF: Promoting sustainable water management, a circular and resource efficient economy, and sustainable urban mobility													
SO(v)	Modernise potable water networks and plants, improve leakage control and promote water savings	Beneficial	Likely	Permanent	Permanent	Reversible	Likely	Remote	Medium	National	High		Fewer water system leaks
SO(vi)	Improve separately collected organic waste through investment in an Organic Processing Plant	Beneficial	Certain	Permanent	Permanent	Reversible	Likely	Remote	High	National	High		Improved organic waste management
SO(viii)	Investing in sustainable multimodal urban mobility	Unclassified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?	Effect dependent on the development extent and location (if any)
	Shift towards the use of alternative fuels in transport	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management
Priority 3 CF – A more connected Europe by enhancing mobility													
SO(i)	Investment in the TEN-T road network	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
	Investment in the Ten-T ports	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
Priority 6 - Just Transition													
SO(i)	Provision of onshore power supply	Adverse	Possible	Temporary	Infrequent	Reversible	Possible	Remote	Low	Immediate surroundings	Low		C&D waste generation from works
Priority 7: Technical Assistance													
N/A	Technical assistance	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No effect on waste management

7.2.9 Transboundary impacts

Some transboundary impacts are foreseen from the implementation of the ERDF/CF/JTF programme/plan, particularly through the investment of the interconnector. This measure will cover part of the territory under the jurisdiction of Italy. At this stage, it is difficult to predict the extent of such adverse impacts. Such transboundary impacts and their mitigation will be addressed as part of the EIA at permitting stage.⁷²

7.3 ASSESSMENT OF ALTERNATIVES

Comparing the proposed programme with alternative scenarios is a vital part of the SEA process since it allows the identification of potential recommendations and improvements which could mitigate any adverse impacts. This stage in the process focuses on identifying alternative approaches which could give better environmental conditions.

Three alternatives are used in this SEA, as outlined in Section 6:

- Alternative 0: Zero-option
- Alternative 1: Minimum scenario which satisfies the total financial allocations as per CPR Regulation ERDF/CF Regulation and the CPR Regulation
- Alternative 2: As proposed in the ERDF, CF Programmes and the JTF Plan 2021-2027

The zero-option (Alternative 0) represents a theoretical alternative where no funds are allocated under these regulations. This Alternative is purely theoretical since the allocation of funds is required by legislation. This Alternative would mean that there would be no possibility to receive the funds/measures to invest in energy efficient equipment and achieve energy savings through the investments in the interconnector/battery storage to support the electricity grid. Furthermore, in the absence of the ERDF/CF/JTF programme/plan, fewer investments will be made in the environment, such as green infrastructure/Natura 2000 conservation & restoration. The minimum intervention scenario (Alternative 1) represents a scenario in which the minimum funds are allocated to the environment, as outlined in Table 14. Alternative 2 assumes full implementation of the policy according to the proposed measures in the draft programme. This Alternative reflects the increased contribution beyond the regulatory requirements and the development of the draft ERDF/CF/JTF Plan. Climate contribution will be 48%, which exceeds the regulatory amount of 37% under for the achievement of climate objectives by 11%.

The vast majority of the measures included in the ERDF, CF Programmes and the JTF Plan 2021-2027 have either no effect or a positive effect on the environmental themes studied. The only measures which show an adverse effect on the environment are

⁷² Considerations have been taken in line with the Strategic Environmental Assessment Regulations S.L.549.61 article 8.

those which involve construction works (Business Incubation Centre & industrial facilities, battery storage facility, electrical interconnector project, juvenile secure unit, acute mental hospital, facility for paediatric services, development of an organic processing plant). The impacts of some measures are labelled as unclassified since they propose upgrades to existing facilities and road networks which may or may not involve construction works. Furthermore, the nature and extent of works of those involving construction are unknown, bringing uncertainty to their impacts. Impacts from construction works should be assessed in detail as part of the EIA process, to identify project-specific impacts and applicable mitigation measures.

Since the majority of the proposed measures yield positive impacts on the environment, the do-nothing scenario (Alternative 0) will have the least beneficial impact on the environment of the three possible scenarios. Both the do-minimum scenario (Alternative 1) and the as-proposed scenario (Alternative 2) will give rise to positive impacts on the environment. However, Alternative 1 offers less allocated budgets for the environment when compared to Alternative 2, particularly for Priority 2 (Promoting clean and fair energy transition, green and blue investment, the circular economy, and sustainable urban mobility). This would mean that either the funds are obtained from national budgets, or some of the projects may not be implemented to the same extent or at all. In the former case, Alternative 1 and 2 would yield the same environmental effects, while in the latter, the Alternative 1 scenario would yield less beneficial effects on the environment than Alternative 2.

Alternative 2 is the most suited alternative since it will exceed the requirements of the CPR Regulation ERDF/CF Regulation and the CPR Regulation by allocating a significantly higher amount towards climate change prevention measures. Various sectors will benefit from interventions that support better energy efficiency and less harmful practises. In the absence of the ERDF/CF/JTF programme/plan (Alternative 0), these industries may not have the necessary resources for reducing their carbon footprint, improving health, societal and cultural infrastructure, etc.

Comparison between the impacts of the three alternatives on the five environmental themes is summarised in Table 24.

TABLE 24: SUMMARY OF ALTERNATIVES & THEIR ENVIRONMENTAL IMPACTS

ENV THEME	ALT 0		ALT 1		ALT 2	
	IMPACT		IMPACT		IMPACT	
	SHORT	LONG	SHORT	LONG	SHORT	LONG
Air quality	Red	Red	Red	Green	Red	Green
Biodiversity	Red	Red	Dark Red	Green	Dark Red	Dark Green
Land uses & landscape	Grey	Grey	Dark Red	Green	Dark Red	Green

ENV THEME	ALT 0		ALT 1		ALT 2	
	IMPACT		IMPACT		IMPACT	
	SHORT	LONG	SHORT	LONG	SHORT	LONG
Cultural heritage	Grey	Red	Red	Green	Red	Dark Green
Energy & water consumption	Grey	Dark Red	Red	Green	Red	Green
Climate change	Grey	Dark Red	Red	Green	Red	Dark Green
Transport & related infrastructure	Grey	Red	Red	Green	Red	Green
Waste management	Grey	Red	Red	Green	Red	Green

7.4 DATA GAPS AND OTHER DIFFICULTIES

The SEA made use of data relevant to the national context which is available in the public domain. Data on the baseline conditions in the national context was available and no data gaps were encountered in extracting information on the SEA’s indicators. Nevertheless, the baseline conditions are established on current environmental conditions and likely trends of the environmental themes and indicators with time. While this provides the most likely scenario, the actual outcome from the actions which are already being planned might be different from those estimated. Since it is unreasonable and misleading to quantify impacts on many of the environmental themes, the SEA was carried out on a qualitative basis, based on available data and the consultants’ expertise.

Given that the ERDF, CF and JTF Programme 2021-2027 will operate at a national scale, collecting and analysing information on successful implementation brings about a number of limitations. In accordance with the regulations and practice guidance on SEA, the assessment has taken into account the level of detail presented in the draft ERDF, CF and JTF Programme 2021-2027. At this stage, limited detail on the measures, such as location, timings and duration of certain works is available. In line with best practice techniques, a risk-based approach has been taken, in which we assumed the worst-case scenario from an environmental impact point of view. In certain instances, mitigation measures have been determined to induce both an adverse and a beneficial impact on specific environmental themes, thus also causing an unclassified impact.

Nevertheless, the impacts arising from the implementation of the measures may differ from those predicted in this SEA. Some measures were categorised as “unclassified”, with some having numerous possible outcomes. Table 25 provides a summary of these unclassified measures, as well as a justification.

TABLE 25: POLICY MEASURES WITH UNCLASSIFIED IMPACTS

MEASURE	UNCLASSIFIED ENV. THEMES	JUSTIFICATION
Public sector investment in research and innovation (R&I)	Air quality, biodiversity, land uses and landscape, cultural heritage, energy and water consumption, climate change, transport and related infrastructure, waste management	Effect dependent on research outcomes and ultimate use
Supporting private sector investment in R&I	Air quality, biodiversity, land uses and landscape, cultural heritage, energy and water consumption, climate change, transport and related infrastructure, waste management	Effect dependent on research outcomes and ultimate use
Business Incubation Centre & industrial facilities	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Investment in energy storage and campaigns	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Upgrading of Waste Water Treatment Plant	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Developing an acute mental health hospital	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Investment in a facility for paediatric rehabilitation services	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Investing in youth rehabilitation	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Investing in specialised recreational facilities for persons with disability or illness	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location
Protecting and promoting Gozo's	Air quality, biodiversity, land uses and landscape, cultural	Effect dependent on the type of initiatives

MEASURE	UNCLASSIFIED ENV. THEMES	JUSTIFICATION
characteristics to foster Gozo's socio-economic fabric	heritage, energy and water consumption, climate change, transport and related infrastructure, waste management	implemented
Modernise potable water networks and plants, improve leakage control and promote water savings	Biodiversity, land uses and landscape, cultural heritage, climate change, transport and related infrastructure	Effect dependent on the development extent and location (if any)
Improve separately collected organic waste through investment in an Organic Processing Plant	Climate change	Effect dependent on balance between reduced demand on Delimara power station and increased GHG emissions
Investing in sustainable multimodal urban mobility	Biodiversity, land uses and landscape, cultural heritage, waste management	Effect dependent on the development extent and location (if any)
Investment in the TEN-T road network	Biodiversity, land uses and landscape, cultural heritage, energy and water consumption, waste management	Effect dependent on the development extent and location (if any)
Investment in the Ten-T ports	Biodiversity, land uses and landscape, cultural heritage	Effect dependent on the development extent and location

8 SHORTCOMINGS AND RECOMMENDATIONS

Following the preparation of the draft SEA, the consultants have identified eight aspects that are recommended for inclusion in the ERDF, CF Programmes and the JTF Plan 2021-2027. The omission of the below measures from the current ERDF, CF Programmes and the JTF Plan is not considered an adverse impact. Nevertheless, the Programmes have the opportunity to fund projects that make Malta's industry and transport sectors more sustainable and bring it closer to a circular economy, thus enriching the Programme.

Transport upgrades

Malta's society remains heavily reliant on private vehicles, with an increase of 54 motor vehicles per day.⁶⁵ At the end of Q4 2021 Malta had 413,019 licensed motor vehicles which leads to traffic congestion brought about by high population density, amongst other factors.

The upgrades to the national transport network should be targeted toward encouraging collective transport and promote multi-modality whenever possible. Projects which aim to encourage public transport use, as well as increasing the safety and efficiency of pedestrian infrastructure should be treated favourably. Furthermore, it is recommended that further steps are taken to implement a sustainable modal shift. Promoting and easing the switch to forms of mobility that are energy efficient and respectful to the environment would facilitate the transition to carbon neutrality. Such projects include increasing infrastructure that encourages the take up of EVs (such as charging pillars) as well as shifting towards alternative fuels in a climate-resistant manner. Environmental benefits from facilitating the transition to low-carbon modes of transport include improved air quality and reduced GHG emissions that will have a long-lasting effect on human health and ecosystems.

In agreement with ERA's comments during consultation, projects which aim to create public transport corridors, pedestrian pathways, EV charging pillars etc., could create an additional demand for land space. Prioritising proposals which make use of existing urban streets is therefore favourable. Wherever possible, interventions in rural areas should be low-key, limited to existing committed sites and sympathetic to the rural context. Projects with no/minimal land take-up, visual intrusion into the landscape, impacts on the rural character, and damage to topographic/rural features, in line with local guidelines and legislation, should be prioritised.

Renewable energy sources

Priority 2 of the ERDF Programme 2021-2027 provides measures to improve the local state of energy, wastewater, biodiversity and urban mobility. One of the measures aims to construct Investment in energy storage and promotional campaigns, thereby facilitating the transition to renewable energy. Nevertheless, as of 2020, Malta's energy largely originates from local power plants (73.6%) and imports (16.7%), with only 9.7% of Malta's energy coming from renewable sources.⁴⁷

As part of the draft Environmental report, the consultants put forward a recommendation to support renewable energy generation, such as solar/wind energy. The recommendation for wind energy has been taken on board in the Programme, as provided for under Priority 2 (ERDF). In terms of solar farms, comments made by ERA on the strategic environmental concerns associated with the Solar Farm Policy (2017) should be considered during the proposal adjudication process. Other forms of large-scale renewable energy facilities would require early discussion with ERA for screening of potential environmental impacts. In agreement with ERA's comments during consultation, project proposals for small-scale renewable energy facilities in rural areas located within existing committed sites (such as the rooftops of farm buildings, away from sensitive locations, natural sites, scenic areas and valleys) should be prioritised.

Gozo sustainable urban development

Priority 5 provides one measure which would fund initiatives for sustainable urban development in Gozo. In line with the ERDF/CF Regulations, this measure requires the drafting of a SUD Territorial Strategy Document which outlines proposals for the sustainable urban development of Gozo. Further elaboration on the type of upgrades and/or developments that will be funded through this financial scheme will be presented as part of this Strategy Document. Projects which address environmental issues, increase Gozo's renewable energy generation and protect/rehabilitate its natural and cultural resources should be given priority. In agreement with ERA's comments during consultation, proposals for sustainable urban development in Gozo are welcomed, provided that Gozo's rural characteristics and traditional villages are not adversely affected.

Linking research to benefits

The Programme provides support for research into sustainability of industry and commerce. Such proposals should be in line with the Malta Smart Specialisation Strategy 2021-2027, which in fact identifies six thematic areas, most of which guide research into low-carbon and sustainable practices:

- Health and Well-being, with a focus on cancer, cellular therapy, drug development, digital tools to support healthcare, focusing on e-health and bioinformatics and biomedical engineering.
- Sustainable Use of Resources for Climate Change Mitigation and Adaptation, with a focus on net-zero carbon buildings, renewable energy generation and energy storage solutions, resource efficiency in industry and turning waste into a resource.
- Smart Manufacturing, with a focus on sustainable manufacturing and flexible automation.
- Marine & Maritime Technology, with a focus on the valorisation of marine resources and maritime technology.

- Aviation and Aerospace, with a focus on avionics, composite materials and development of new technologies for maintenance of new products.
- Future Digital Technologies (this is both a vertical priority and a horizontal enabler for the former five areas), with a focus on big data and data analytics, open data, smart space applications, human-centric applications, digitizing industries and sustainable use of resources or climate change mitigation and adaptation.

Prioritising projects addressing environmental concerns

During proposal adjudication, proposals/initiatives that address a number of environmental concerns should be given priority over those that do not. Environmental requirements during project selection should be allocated enough weighting potentially through eligibility and selection criteria to ensure that project proponents actively pursue environmental requirements.

Locating interventions in a way to avoid significant impacts

In agreement with ERA's comments during consultation, we recommend that physical interventions are located in areas which avoid significant impacts on natural sites, landscape and seascape, undeveloped rural land, biodiversity, cultural heritage and their context. Preference should therefore be made to proposed developments that are least harmful to the environment, primarily directed towards areas already designated for development and similarly committed sites, away from important environmental areas such as valleys, ridge-edges, cliffs, escarpments, natural habitats and sites, natural coast, important seabed habitats, etc. Furthermore, preference should be given to projects which minimise the generation of waste as much as possible, and implement the waste hierarchy. Suitable abatement measures should also be considered as part of the design of the development and its implementation, in order to minimise noise and air emissions.

Integration of conclusions from other SEAs

In agreement with ERA's comments during consultation, we recommend that conclusions on other SEAs (including comments from all stakeholders) as relevant to this Programme should be considered in the screening of proposals supported by this Programme. Such SEAs include those on the WASTE MANAGEMENT PLAN 2021-2030, amongst others.

Prioritising proposals which minimise waste generation

In agreement with ERA's comments during consultation, preference should be given to projects that reuse and convert existing buildings/spaces and recycle existing building material as much as possible, in order to minimise waste generation according to the waste hierarchy. This would help to minimise the amount of C&D waste generated as a result of demolition, excavation and/or dredging works, which is expected to have a negative impact in terms of disposal.

9 MONITORING REQUIREMENTS

Periodic monitoring and review of the ERDF/CF/JTF programme/plan is necessary to enable continued success of the strategy. The monitoring plan is set to reflect the changes in national patterns for all environmental themes, technology development and ongoing discussions at European level relating to the ERDF, CF and JTF Programme 2021-2027.

Measurable indicators are necessary to quantitatively assess the progress of the Programme's implementation, in terms of the five environmental themes. Making use of the same indicators to monitor the effectiveness of the Programme would facilitate the interpretation of the results.

In most cases, the indicators can be obtained from existing programmes/datasets gathered as a result of environmental permitting, environmental assessments and/or other national monitoring programmes which are associated with the implementation of environmental obligations. In this way, duplication of efforts is avoided. The aim of the monitoring programme within this environment report is to have a consistent set of data upon which potential adverse environmental impacts can be identified.

There are also project-level mechanisms that are in place to protect the environment, such as detailed EIAs in line with the EIA REGULATIONS and environmental/industrial permitting. Such mechanisms should also be considered so as to ensure that the Programme measures are implemented without having, individually or cumulatively, significant adverse environmental impacts.

The following subsections outline the monitoring and measurements recommended for the implementation stage of the ERDF, CF and JTF Programme 2021-2027.

9.1 AIR QUALITY

Monitoring of air quality may assist to study the effect of measures which may influence electrical demand (and therefore atmospheric pollutants) on the Delimara power station, renewable energy generation, absorption of atmospheric pollutants by plants, number of private vehicles, number of electrical vehicles and shore supply. Furthermore, monitoring of air quality during construction works would also help to assess the adverse impacts arising from the measures. The Programme's measures also include the construction of a new facility which releases atmospheric pollutants: the Organic Processing Plant (OPP). These facilities should be monitored through their operational permit conditions.

The chemical parameters considered as part of this SEA are regularly being monitored by the ERA in relation to national monitoring programmes; such data can be made use of for air quality monitoring purposes. The monitoring of emissions generated during construction works should also be included in the works method statements. Finally, atmospheric emissions from the Organic Processing Plant should be monitored in line with the IPPC permit conditions.

9.2 BIODIVERSITY

Criteria for biodiversity ensure that the ecological status of Maltese environment is maintained and safeguarded. This is measurable by observing trends of parameters which are already being monitored in line with the Habitats Directive (HD), Marine Strategy Framework Directive (MSFD) and WATER FRAMEWORK DIRECTIVE. In this case, relevant parameters include the status of Malta's territorial habitats, as well as that of water bodies in terms of biodiversity (Descriptor 1) and seafloor integrity (Descriptor 6) as per the requirements of the MSFD. Parameters include the extent of protected habitats and species on land, as well as geographical distribution of indicator species such as *Posidonia oceanica* since such species is included in the annexes of the Habitats Directive and can be found in Natura 2000 sites. Since these parameters are assessed through existing national monitoring programmes, such data is readily available from the ERA.

Any developments which are funded under the Programme that could have a significant adverse impact on Special Areas of Conservation (SACs) and/or Special Protection Areas (SPAs) will also require an Appropriate Assessment in line with the FLORA, FAUNA AND NATURAL HABITATS PROTECTION REGULATIONS, TREES AND WOODLANDS PROTECTION REGULATIONS and CONSERVATION OF WILD BIRDS REGULATIONS. This exercise would help to more specifically identify biodiversity impacts and a monitoring programme at project-level.

9.3 LAND USES AND LANDSCAPE

The developments being proposed by the Programme are likely to have an adverse effect on the Maltese land use and landscape. Such impacts would arise both due to the temporary presence of machinery during the construction works, and due to new permanent structures during the operational phase (particularly when the developments are on undeveloped/agricultural land). Although impacts on landscape are difficult to quantify, indicators such as the extent of Area of Very High Landscape Sensitivity can be used to monitor and measure these impacts; such data is readily available from the ERA.

Furthermore, sea uses can be monitored by reviewing complaints to the relevant transport authorities during construction works. All works that temporarily take up marine areas must be appropriately covered by a Notice to Mariners.

9.4 CULTURAL HERITAGE

Maintaining the conservation status of cultural heritage can be achieved by protecting scheduled and designated areas from various threats such as take-up of virgin land and land reclamation which may damage archaeological features of national importance. Monitoring the success of this criterion involves the assessment of the number of complaints relating to features of cultural heritage affected by the measures, along with the archaeological monitoring of such developments to properly document and protect any discoveries.

9.5 ENERGY AND WATER CONSUMPTION

Energy generation, security of supply and water consumption merit protection from any measures whose construction phase may have temporary but adverse impacts on these utility services. Monitoring datasets that are regularly reported by the NSO is crucial to monitor the adverse and beneficial effects of the programme. Such datasets are readily available from the NSO.

9.6 CLIMATE CHANGE

The Programme measures aim to, amongst others, increase energy efficiency and facilitate the transition to a lower national carbon footprint. To monitor the success of the Programme, the net atmospheric emissions of greenhouse gases on a national scale should be measured and monitored over time. Such data sets are readily available from the NSO and MRA.

9.7 TRANSPORT AND RELATED INFRASTRUCTURE

Transport and related infrastructure are generally expected to improve through the implementation of the Programme measures. Monitoring of the national traffic situation is required to assess the success of the policy; this can be achieved through measurable parameters such as vehicles by type, bicycle and e-bicycle usage and public transport usage. Such data is readily available from various entities such as the NSO, and TM.

9.8 WASTE MANAGEMENT

Efficient resource management is achieved through the promotion of sustainable waste management by following the waste hierarchy. Measures which are expected to increase waste generation, such as construction works (Business Incubation Centre & industrial facilities, battery storage facility, electrical interconnector project, acute mental hospital, facility for paediatric services, development of an organic processing plant) and measures which would generate WEEE (battery energy storage systems), should be monitored. Monitoring parameters to assess the success of waste management include measurement of waste generation of different streams, evaluating the recycling rates for WEEE, the volume of Construction and Demolition waste generated and disposed of (not reused). Such datasets are readily available from MEEE and Wasteserv.

10 NON-TECHNICAL SUMMARY

AIS Environment completed an SEA on the ERDF, CF Programmes and the JTF Plan 2021-2027. The SEA evaluates the environmental impacts of the Programme on a national scale. The European Regional Development Fund (ERDF) fund aims to reduce economic, environmental and social disparities and foster green and sustainable socio-economic growth. The Cohesion Fund (CF) provides support for those Member States, such as Malta, that have a gross national income per capita that is lower than 90% of the EU-27 average with a focus on the environment and trans-European networks. The Just Transition Fund (JTF) is one of the three pillars of the Just Transition Mechanism, which aims to ensure a swift transition towards a climate-neutral economy.

The Programme aims to reduce the carbon footprint and environmental impacts of Malta's industrial, commercial and transport sectors on a national scale. Most of the measures are therefore beneficial to the environment, including:

- Battery support to the energy network, which would facilitate Malta's transition to renewable energy generation from unstable sources such as wind and solar;
- Pilot projects for the development of wind farm projects, which would increase the share of renewable energy sources and increase the security of Malta's power generation sources;
- Electricity interconnector project, which would improve the security of Malta's electrical supply and reduce the proportion of energy generated from non-renewable fuels;
- Creation of ecological corridors to enhance connectivity between Natura 2000 sites and increase their resilience to a changing climate;
- Valorisation of cultural heritage, including buildings in the public domain;
- Develop an organic processing plant to prevent disposal of organic material in landfill and generate renewable energy;
- Optimising water distribution facilities to reduce leaks, thereby reducing water wastage; and
- Promoting sustainable multimodal urban mobility, thereby reducing atmospheric emissions, carbon footprint and improve effectiveness of transport network.

Some negative impacts might arise from the Programme measures. Impactful measures are those involving construction works (ex: electricity interconnector project and development of organic processing plant) and increased generation of electronic waste (ex: battery storage systems).

The SEA compares three alternative theoretical scenarios of the Programme. The zero-option (Alternative 0) is a scenario where the Programme includes no funding schemes; this Alternative is purely theoretical, since the law requires that funds are allocated through the ERDF, CF Programmes and the JTF Plan 2021-2027. Alternative

2 assumes full implementation of the policy according to the proposed measures in the draft Programme. The proposed Programme actually offers more funds than is required by Regulation (EU) 2021/1058 on the European Regional Development Fund and on the Cohesion Fund. To compare, the minimum intervention scenario (Alternative 1) presents the bare minimum amount of funds that is required by law.

Since the majority of the proposed measures yield positive impacts on the environment, the do-nothing scenario (Alternative 0) will have the least beneficial impact on the environment of the three possible scenarios. Both the do-minimum scenario (Alternative 1) and the as-proposed scenario (Alternative 2) will give rise to positive impacts on the environment. However, Alternative 1 offers less allocated budgets for the environment when compared to Alternative 2. This would mean that either the funds are obtained from national budgets, or some of the projects may not be implemented to the same extent or at all. In the former case, Alternative 1 and 2 would yield the same environmental effects, while in the latter, the Alternative 1 scenario would yield less beneficial effects on the environment than Alternative 2. Alternative 2 is the most suited alternative since it will exceed the requirements of the CPR Regulation ERDF/CF Regulation and the CPR Regulation by allocating a significantly higher amount towards climate change prevention measures. Various sectors will benefit from interventions that support better energy efficiency and less harmful practises.

The consultants put forward eight recommendations to boost the beneficial environmental effects of the Programme. Firstly, projects which aim to encourage public transport use, as well as increasing the safety and efficiency of pedestrian infrastructure should be treated favourably. As part of the draft Environmental report, the consultants put forward a recommendation to support renewable energy generation, such as solar/wind energy. The recommendation for wind energy has already been taken on board in the updated Programme, as provided for under Priority 2 (ERDF). In terms of solar farms, comments made by ERA on the strategic environmental concerns associated with the Solar Farm Policy (2017) should be considered during the proposal adjudication process. For projects targeted towards Gozo's sustainable urban development proposals which address environmental issues, increase Gozo's renewable energy generation and protect/rehabilitate its natural and cultural resources should be given priority. Research & Innovation proposals should be in line with the Malta Smart Specialisation Strategy 2021-2027. During proposal adjudication, proposals/initiatives that address a number of environmental concerns should be given priority over those that do not. Conclusions on other SEAs (including comments from all stakeholders) as relevant to this Programme should be considered in the screening of proposals supported by this Programme. Finally, preference should be given to projects that reuse and convert existing buildings/spaces and recycle existing building material as much as possible. Including these recommendations would enrich the Programme.

This Environmental Report has been subjected to public consultation, and the comments received have been integrated into this final version of the Environmental

Report. A Monitoring Report and Adoption Statement has been prepared on the basis of the SEA process and findings.

ANNEX 1: CONSULTATION COMMENTS ON ENVIRONMENTAL REPORT

Sacha Dunlop
Senior Manager
AIS Environment

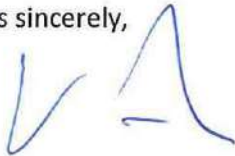
25th July 2022

Subject: Consultation on the SEA Environmental Report for the European Social Fund Plus (ESF+), European Regional Development Fund (ERDF), Cohesion Fund (CF) and the Just Transition Fund (JTF) for 2021-2027

ERA welcomes the opportunity to comment on the SEA Environmental Report of the ESF+, ERDF, CF and the JTF, which the Authority received by email on 20th July 2022.

The conclusions in the Environmental Report are noted. ERA considers that its comments (enclosed) should be taken into consideration in the Environment Report so as to ensure that potential environmental impacts associated with projects supported by this programme are mitigated at an early stage.

Yours sincerely,



Mr. Kevin Mercieca
Acting Chief Executive Officer
Environment and Resources Authority



ERA's comments on the Strategic Environmental Assessment (SEA) Environmental Report for the Strategic Environmental Assessment (SEA) Report for the European Social Fund Plus (ESF+), European Regional Development Fund (ERDF), Cohesion Fund (CF) and the Just Transition Fund (JTF) for 2021-2027

25th July 2022

1. Introduction

1.1 ERA welcomes the opportunity to comment on the Strategic Environmental Assessment (SEA) Environmental Report (ER) for the European Social Fund Plus (ESF+), European Regional Development Fund (ERDF), Cohesion Fund (CF) and the Just Transition Fund (JTF) for 2021-2027. ERA's review was based on the following sections of the Environment Report: section 7 (impact assessment); section 8 (shortcomings & recommendations); and section 9 (monitoring requirements).

1.2 The following comments are provided without prejudice to ERA's review and additional comments on any eventual projects that may be supported by this programme, when more detailed environmental assessment and/or permitting will be required. Depending on their nature, scale and context, proposed projects may require different types of environmental assessments or other related screenings including Environmental Impact Assessment (EIA) and/or project-level Appropriate Assessment, as relevant. These project-level mechanisms are important to ensure that any site-specific adverse impacts on the environment, including on land, biodiversity, the landscape, etc., resulting from the proposals which are supported by the Programme are mitigated at an early stage.

2. General comments

2.1 Most of the proposals in this Programme involve physical development, infrastructure and similar interventions. The potential impacts of these proposals on biodiversity, land and the landscape are unknown at this stage since the details of most of the emerging projects (e.g. scale, extent and location) are currently not available. It is acknowledged that investment in particular infrastructure listed below, such as treatment of wastewater, would also be beneficial for the environment. The main relevant proposals consist of:

- Investment in energy storage and promotional campaigns;
- optimising water distribution facilities and ensuring water supply security;
- investments in wastewater treatment plants;
- sustainable multimodal urban mobility;
- investments in TEN-T road network;
- enhancing maritime gateways;
- investments in education facilities, youth rehabilitation, mental health infrastructure, paediatric services, and specialised care facilities;
- protecting and promoting Gozo's characteristics to foster sustainable growth; and
- provision of onshore power supply.

2.2 **ERA considers that the choice of location for such proposals is crucial to avoid significant environmental impacts. Therefore, the Environmental Report should clearly recommend that preference should be given to proposed developments, infrastructure and similar interventions which are least harmful to the environment, which are primarily directed towards areas already designated for development and similarly committed sites, away**

from important environmental areas such as valleys, ridge-edges, cliffs, escarpments, natural habitats and sites, natural coast, important seabed, etc. It is also recommended that suitable abatement measures are considered as part of the design of the development and its implementation, in order to minimise noise and air emissions.

- 2.3 Moreover, particular proposals are linked to other plans, and/or projects. ERA has already provided comments through the SEA process on some of these plans (such as the Waste Management Plan 2021-2030) and is currently engaged in the environmental screening of other relevant infrastructure. **It is important that ERA's environmental input into such processes be duly taken into consideration in future proposals supported by this programme.**

Construction and Demolition waste

- 2.4 Various proposals in the programme will generate additional C&D waste as a result of demolition, excavation and/or dredging works, which is expected to have a negative impact in terms of disposal. **The Environment Report should highlight that preference should be given to projects that reuse and convert existing buildings/spaces and recycle existing building material as much as possible, in order to minimise waste generation according to the waste hierarchy.**

Appropriate Assessment

- 2.5 Given that the details of the proposals are not available in the programme, it is difficult to determine whether these could have a significant impact on any Special Areas of Conservation (SACs) and/or Special Protected Areas (SPAs) at this stage. **The Environment Report should acknowledge such difficulty and that any future projects supported in this programme, that could have significant adverse impact on SACs and SPAs, will also require an Appropriate Assessment study, in order to avoid such impacts.**

3. Detailed comments

- 3.1 Other detailed comments on the Environment Report (ER) are highlighted below:

Section 7 Impact Assessment

- 3.2 It is unclear how the impact assessment ruled out the possibility of impacts on air quality from *'Investments in education facilities'* when (i) details of such proposals are currently not available; and (ii) it is clear that there is a connection between school facilities and traffic generation, with traffic being one of the main sources of air pollution. The ER needs to be amended accordingly.
- 3.3 The ER highlights that the proposal *'Enhancing and valorising Malta's touristic product'* shall have no effect on biodiversity, land use and landscape. ERA positively welcomes this approach, provided that the type of initiatives considered for implementation of this proposal is focused on the protection and restoration of historic and cultural buildings and spaces, as opposed to continued pressures for additional development in the countryside.
- 3.4 ERA considers that the proposal *'Invest in the wastewater collection network and wastewater treatment plants'*, could have impacts in terms of land take, landscape, biodiversity, cultural

heritage, etc., unless these facilities are clearly directed to existing urban and committed areas. The ER needs to be amended accordingly to include suitable safeguards in this regard.

- 3.5 Proposals to *'Shift towards the use of alternative fuels in transport'* are noted. It is important to ensure that any infrastructural requirements, such as the setting up of additional EV charging points, are accommodated in existing committed sites.
- 3.6 It is unclear why the proposal *'Development of an Organic Processing Plant'* is classified as having major adverse impacts in terms of take-up of agricultural land. In fact, ERA had already noted from the Waste Management Plan 2021-2030 that such facility will be accommodated within the ECOHIVE Complex in order to reduce further land take-up. The ER needs to be updated accordingly.
- 3.7 *'Investing in sustainable multimodal urban mobility'* such as new pedestrian bridges, interconnected bicycle lanes, wide and safe pavements, etc. are considered beneficial to the environment, as long as these are contained within the footprint of existing roads/routes or similar committed sites. Any impacts on land should be kept to the barest minimum.

4. Shortcomings and Recommendations

- 4.1 Whilst it is acknowledged that the recommended transport upgrades are expected to improve air quality and reduce GHG emissions, ERA considers that the creation of public transport corridors, pedestrian pathways, bicycle lanes, infrastructure related to EV's etc., will create an additional demand for land space. ERA suggests that proposals implemented as part of existing urban streets should be given priority. Any required interventions in rural areas should be low-key, limited to existing committed sites and sympathetic to the rural context. The layout, planning and design of these routes, and of any related ancillary facilities, should not take-up further undeveloped land, create visual intrusion into the landscape and result in the formalisation of rural areas, impact on the rural character and damage to topographic/rural features (e.g. rubble walls).
- 4.2 Measures supporting renewable energy sources, such as solar and wind energy are noted. In terms of solar farms, ERA has already advised on the strategic environmental concerns associated with the Solar Farm Policy (2017), including the use of suitable sites for such use. Other forms of large-scale renewable energy facilities would require early discussion with ERA for screening of potential major environmental impacts. Other small-scale renewable energy facilities in rural areas should be directed to existing committed sites, such as the rooftops of farm buildings, away from sensitive locations, such as natural sites, scenic areas and valleys.
- 4.3 Proposals for sustainable urban development in Gozo are welcomed, provided that Gozo's rural characteristics and traditional villages are not adversely affected.

Yasmin Schembri

To: Sacha Dunlop
Subject: RE: Invitation for Stakeholder Consultation Session: SEA (Strategic Environmental Assessment) Environmental Report for the ESF,ERDF,CF & JTF Plans/Programmes for 2021-2027

From: Bonnici Bernice at MAFA <bernice.bonnici@gov.mt>
Sent: 13 July 2022 10:07
To: Sacha Dunlop <Sacha.Dunlop@ais.com.mt>; ERDF-CF-JTF Public Consultation at MEFL <feedback.erdff.cf.jtf@gov.mt>
Cc: Azzopardi Bjorn A at MAFA <bjorn.a.azzopardi@gov.mt>; De Martino Mark at MAFA <mark.de-martino@gov.mt>; Caruana Matthew at MAFA <matthew.f.caruana@gov.mt>; Saliba Maria 1 at MAFA <maria.saliba.1@gov.mt>; Guida Maria at MAFA <maria.guida@gov.mt>; Gatt Andrea 1 at MAFA <andrea.gatt.1@gov.mt>
Subject: FW: Invitation for Stakeholder Consultation Session: SEA (Strategic Environmental Assessment) Environmental Report for the ESF,ERDF,CF & JTF Plans/Programmes for 2021-2027

Dear Ms Dunlop,

Good morning.

The attached document has been reviewed. Kindly note our comments below for your attention please:

“MAFA have a query on this statement ‘*Threats to the Maltese landscape include the increased take-up of open spaces for urban and coastal development, taller buildings on urban fringe which obstruct views of historic centres, modern agricultural practices, and increased vehicular access.*’

Why are modern agricultural practices perceived as a threat? With all the new regulatory framework enforced and farm upgrades being made, the contrary should be true. I Don’t think this sentence is justified. Rather when talking about modern farming we think of digital and precision farming which should include better sustainable agriculture with lesser inputs.”

Furthermore, kindly note that Mr Kriss Debono will be attending the session on this item. Details below:

Mr Kriss Debono
Chief Agricultural Officer
Agricultural Directorate
Minsitry for Agriculture, Fisheries and Animal Rights
+356 22924338
kriss.debono@gov.mt

Thank you and regards,

Bernice Bonnici
Manager II
Policy Development and Programme Implementation
Strategy and Support Division

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MINISTRY FOR AGRICULTURE, FISHERIES AND ANIMAL RIGHTS

24 OLD BAKERY STREET, VALLETTA, MALTA

Kindly consider your environmental responsibility before printing this e-mail

Yasmin Schembri

To: Muscat Neil 2 at Western Regional Council; lcassar@lca.org.mt
Cc: Sacha Dunlop; Azzopardi Sandro at Western Regional Council; Regjun Punent at Western Regional Council
Subject: RE: Invitation for Stakeholder Consultation Session: SEA (Strategic Environmental Assessment) Environmental Report for the ESF,ERDF,CF & JTF Plans/Programmes for 2021-2027

From: Muscat Neil 2 at Western Regional Council <neil.muscat.2@gov.mt>

Sent: 21 July 2022 14:58

To: Yasmin Schembri <Yasmin.Schembri@ais.com.mt>; lcassar@lca.org.mt

Cc: Sacha Dunlop <Sacha.Dunlop@ais.com.mt>; Azzopardi Sandro at Western Regional Council <sandro.a.azzopardi@gov.mt>; Regjun Punent at Western Regional Council <regjun-punent.dlg@gov.mt>

Subject: RE: Invitation for Stakeholder Consultation Session: SEA (Strategic Environmental Assessment) Environmental Report for the ESF,ERDF,CF & JTF Plans/Programmes for 2021-2027

Dear Yasmin,

Many thanks, as discussed, the queries put forward were:

- a. Whether the report recognises the need for policy and legislation that protects the investments of private persons when it comes to renewable energy, more specifically solar energy via photovoltaic panels when exposed to the risk of adjacent properties vertically extending thereby resulting in shading upon the investment.
- b. Whether the report identifies any plans that may trigger or push for an increase in building height limitations, or on the contrary pushes for a need to *limit the growth* in this regard.
- c. The time by which relevant stakeholders were notified, resulting in limitations in the consultation process.

Best regards,

Neil Muscat
Environmental Manager

T: 22266622 | E: neil.muscat.2@gov.mt

KUNSILL REĠJUN-PUNENT - WESTERN REGIONAL COUNCIL

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