THE DEVELOPMENT OF ENVIRONMENTAL LAW IN MALTA

DISCUSSIONS ON CERTAIN TOPICAL ISSUES INCLUDING PRACTICAL APPLICATIONS

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Foreword

The development of Environmental Law, or rather the regulation of natural resource management, is considered to be a relatively new legal stream of norms that have one principal aim, namely the conservation of natural resources from detrimental anthropogenic activity. In truth, norms protecting natural resources such as fresh water, the oceans, trees, fisheries, soil and sand go back longer in time even under Maltese law. As the paper points out however, what is more recent is the proliferation of "environmental law" guided by scientific parameters of what constitutes harm to such resources, rather than solely relying on tort law, as is the case with other legal streams of civil law.

This form of legal specialization and the criminalization of environmental harm, led to the development of a body of laws whose interpretation, implementation and enforcement are shaped by substantive and procedural rules that are tailormade to ensure the preservation from harm of natural resources that may be a common resource, privately owned, finite or renewable, of commercial value or which have an intrinsic value of their own, simply by being a unique part of the planet we call home.

The law students who worked on this paper therefore deserve credit for discussing so bravely a topic, which is very controversial and contentious in Malta. They delve into a variety of scenarios where environmental law in Malta is mainly seen to be applied or contested. As the paper points out, the challenges are many, but it is perhaps the governance of environmental law that is the most crucial at this point in time. This paper serves to highlight that the legal sources are plentiful, a robust compliance strategy is what is required to ensure the implementation of environmental law for the benefit of present and future generations of humanity and the planet as whole.

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Introduction to the concept of Environmental Law

Environmental law covers a broad range of human activities that affect air, water, land, flora or fauna and other natural resources. Environmental law can be described as those laws that regulate and control the negative impact that human activities have on the environment in order to safeguard natural resources, whether living or non living. Environmental Law finds its origin in other areas of law, including Public Law, Criminal Law and Civil Law. In fact, the first legislative provisions on Environmental Law were found in the Code of Police Laws. The term 'Environmental Law' came about due to the various norms which emerged in the regulation of natural resources, and generated a set of specialized principles which are applied when it comes to the regulation of natural resources.

In terms of the regulation of human activities which may potentially cause damage to our natural resources, including trees, plants, birds, soil, sand and fisheries, the legal situation in Malta was a rather varied one. Certain laws were written in the beginning of the 20th Century, whilst other provisions were introduced in the 1970s, when International Law began evolving. The 1990s were characterized by Malta's ratification of a number of Environmental Conventions. 1991 was a pivotal year for Environmental Law in Malta, where we saw the introduction of the first Environmental Protection Act. This Act established a legal framework imposing criminal punishment for environmental offences, whilst also establishing the procedure relating to the right of Environmental Review in public decision-making. In 1992, the Development Planning Act was introduced, establishing the Planning Authority and focused on Land Use regulation and Environment Impact Assessments.

Until recently, Malta's main legislative devices for the protection of the environment were the 2001 Environmental Protection Act (hereunder referred to as EPA), the 1992 Planning Development Act and the 2001 Malta Resources Act. The 1991 Act was historic in its nature, as it established criminal liability and introduced Environmental liability. The 2001 EPA enabled the transposition of all of the Environmental Acquis into Maltese Law. In November and December of 2010 the Environment and Development Planning Act, the EDPA, which is Chapter 504 of the Laws of Malta, was brought into force, with other provisions being implemented in 2011. The aim of this new act was to merge together the Environmental Protection Act and the old Development and Planning Act in order to avoid any overlap and conflict that had previously existed between development planning and environmental protection. The approach taken by EDPA is identical to that of the EPA in the fact that EDPA serves as a framework Act which as an enabling Act gives the necessary flexibility to publish subsidiary legislation that makes up the major part Maltese Environmental Law. The EDPA itself does not deal with limited liability companies and does not create any special regime for company officers, however, on the other hand, it deals with body corporates in a general context. This means that it empowers the Minister that is responsible for the environment, to pass regulations which provide that environmental wrongdoings and violations of the EPDA will amount to an offence and in such cases,

"*where the person guilty of the offence is a director, secretary or manager of a body corporate for the economic benefit of whom the offence was committed, such body corporate shall be liable in solidum with the offender for the payment of the said civil debt*"[1].

In this paper we shall be discussing the different approaches taken towards the topic of Environmental Law in Malta and the European Union, and different initiatives and incentives that have been adopted in Malta in order to ensure the safeguarding of the environment and the protection of environmental law.[2]

1 Environment And Development Planning Act, Section 61.

2 Maltese Environmental Law and Environmental Responsibility Behind The Corporate Veil – GANADO Advocates.

1. Overview on Environmental developments in terms of the UN and in Malta

1.1 Analysis on the actions carried out by the UN, in terms of development and Environmental legislation

There are three perspectives through which Environmental Law may be viewed. Firstly, it may be regarded from the aspect of the harmful consequences suffered by humans, due to certain environmental issues such as air quality. In fact, living in a healthy environment is viewed as a human right. The second perspective views a healthy environment as a social or economic right which may find its roots in the 1966 'UN Covenant on Economic, Social and Cultural Rights', treating environmental quality as a value. The third possibility would declare environmental quality as a collective or solitary right, thereby allowing communities or societies to determine themselves in terms of how they would best wish to protect and manage the environment.[3]

1.2 Analysis of certain developments in Malta

The evolution of Environmental law in Malta reflects developments that happened on an International level. As discussed in the previous section, in the 1970s Malta became Party to major Multilateral Environmental Agreements (MEAs) that followed in the wake of the 1972 United Nations Stockholm Conference on the Human Environment. The major impetus towards regulating environmental issues happened in the 1990s, as a follow up to the 1992 United Nations 1992 Rio Conference on Environment and Development. The promulgation of the first Environment Protection Act of 1991 and the Development Planning Act of 1992, strengthened and legally institutionalized environmental governance. This happened through the establishment of the Environment Protection Department and the Planning Authority. The Planning Authority was entrusted with spatial planning regulation whilst the Environment Department with the regulation of natural resource management. Both institutions had to ensure sustainable development of space (land use) and natural resources in accordance with Agenda 21. In 2001 a new Environment Protection Act was promulgated to enable the approximation of national environmental legislation with Chapter 23 of the acquis communautaire as will be discussed in the next part of this paper.

Still another change happened in 2001. The two institutions, namely the Environment Protection Department and the Planning Authority were merged into the Malta Environment and Planning Authority (MEPA). They operated as one authority governed by the same two different legal instruments that had set them up. The 2010 Environment and Development Planning Act however brought about the merger of the two institutions under one Act of Parliament. This move was intended to strengthen environmental concerns into spatial planning. The legal and

[3] Declaration of the United Nations Conference on the Human Environment.

institutional merger however was criticized by environmental non- governmental organisations and developers alike, although for different reasons.

MEPA lasted for five years, from 2010 to 2015. A change in government brought about the demerger of the two public entities and the legal instruments in 2016. Three Acts of Parliament were passed concerning Environmental Protection, namely: 'The Development Planning Act'; 'The Environment Protection Act'; and 'The Environment and Planning Review Tribunal Act'. These new legislative instruments did not bring about major changes in the substantive field of law. Essentially, the main differences were related to the splitting up of MEPA into two main bodies – the 'Planning Authority' (hereunder referred to as PA) which focused on the spatial planning and building aspect related to development, and the 'Environment and Resources Authority' (hereunder referred to as ERA), an autonomous entity focusing largely on environmental and natural resource management. It can be said that the promulgation of the 'Environment and Planning Review Tribunal Act' which previously existed as the Planning Appeals Board under the 2010 Act retained its mandate to hear and determine appeals from decisions taken by either of the two main Authorities. This ultimately, is the main source of environmental protection and sustainability legislation on a local level.

Development is one of the the four pillars of the United Nations as an organisation. The aim here is to *"promote social progress and better standards of life in larger freedom"*. Many assume that the aim of development simply refers to the aspiration to eradicate poverty in the world. However, the UN's aim of development is to allow the individual to enjoy this fundamental human right, and to improve standards of living for everyone. This is intrinsically linked to the environment and its protection, as having a sustainable environment is a human right according to the 1972 'Stockholm Declaration' and therefore, in order for development to take place, the environment in less developed areas must be protected.[4]

[4] The 4 Pillars of the United Nations.

2. Environmental Law and the European Union

2.1. Method of implementation of Community Environmental Legislation

The strengthening of Environmental law in Malta in the new millennium was also symptomatic of Malta's impending membership to the European Union. In fact the Environment Protection Act of 2001 had been revamped to include wide, enabling powers to permit the serves publication of the necessary subsidiary legislation that would transpose the hefty body EU environmental law. European Environmental Law is largely made up of Directives, giving wide berth for Member States to adapt EU law to national circumstances and geophysical realities. This is the reason EU environmental law is often criticised as having no uniform application among Member States. There have been various attempts to strengthen harmonization and ensure faithful transposition and interpretation of EU environmental law across the European Union, in order to implement environmental law effectively and fairly in full respect of EU Primary Law. The abundance of caselaw on the interpretation and application of EU environmental acquis by the European Court of Justice is evidence of the systematic harmonization EU environmental legislation. This is intended to resolve cross border issues and will be beneficial to the public at large by providing a much more effective outcome, through the collaborative work of states on a global level. This sphere of law must not be viewed as an individual body, but rather, one must observe its interaction with other spheres of law, including agriculture, transport and energy.[5]

Like Maltese environmental law EU law developed in sync with the evolution of International Environmental Multilateral Agreements and International conferences that sought to raise concerns about the state of the global environment. In fact it was during the Paris Summit in 1973, that the the objectives relating to the drawing up of an environmental policy were set out for the first time by the European Economic Community, where it was stated that "*particular attention will be given to intangible values and to protecting the environment, so that progress may really be put at the service of mankind*". This resulted in the promulgation of the 'Directorate General for the Environment', which intended to protect the environment and prevent any further degradation. This was done through a proposal, an amendment and the implementation of environmental policies, which also contributed to improving the lives of individuals living in the Member States. This environmental policy was initially constituted to prevent diverse standards of environmental laws among Member States, which could result in trade barriers to foreign investors and cause competitive distortions within the common market, whereas today the aim is that of attaining a sustainable economy. In fact, in the European Economic Community Treaty (hereunder referred to as EEC), no reference was made to the environment, or protection thereof. This was however

5 European Commission, 'Directorate General for the Environment'.

established as a new power in the Single European Act of 1986, where qualified majority voting was introduced in terms of environmental policy.[6]

Following this, the Treaty of Amsterdam of 1997 declared sustainable development to be one of its legal objectives for the first time, which was to be applied within social and also economic dimensions. This resulted in the 2001 'Communication on a European Union Strategy for Sustainable Development', a strategy which aimed at tackling sustainable development among Member States. This posed difficulties with regards to implementation and thus, was later revised in 2006. This became known as the 'Renewed sustainable Development Strategy' and was adopted by the EU Council.[7] The strategy established sustainable development as one of its policy objectives, through the Lisbon Treaty of 2007, and today is enshrined in Article 3 of the Treaty on European Union (hereunder referred to as TEU). This is also evident in Article 11 of the Treaty on the Functioning of the European Union (hereunder referred to as TFEU) which states that "*environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities, in particular with a view to promoting sustainable development*". This continued to promote the achievement of the environmental policy objectives, which would ultimately contribute to the pursuance of compliance among Member States, in terms of environmental legislation.[8]

The 'Institute for European Environmental Policy' is a body which is constituted for the analysis and development of European Environmental Law, whilst also tackling issues relating to air quality, climate change, industrial pollution, water and marine, waste, resources, chemicals, biodiversity and noise pollution. This Institute published the 'Manual of European Environmental Policy' back in 2012, which served as a useful guide in this regard.[9]

2.2. Environmental law and Climate Change: what actions has the European Union taken in order to focus on the correct implementation of the Paris Agreement and the EU Emissions Trading System

The implementation of EU Environmental law as transposed by national law is monitored through the analysis and reports made to the European Commission on behalf of the Member States, whereby information and data is provided to the Commission through reports, indicators, scoreboards and other publications on the conditions of the environment, emissions, market surveillance and cost and benefit of such actions. This process is referred to as "compliance monitoring". This is also monitored through the direct link between European citizens and the Commission, Parliament and Council by the European Environmental Bureau. This is a network of Non-Governmental Organisations (NGOs) with the purpose of protecting

6 Demmke C., 'Towards Effective Environmental Regulation: Innovative Approaches in Implementing and Enforcing European Environmental Law and Policy' (2001), the Jean Monnet working paper.
7 European Commission, 'Introduction to the new EU Water Framework Directive' (8 June 2016).
8 European Commission, 'Legal Enforcement'.
9 European Commission, 'Communication Improving the delivery of benefits from EU environment measures: building confidence through better knowledge and responsiveness', (2012).

the environment. The network is formulated by environmental organisations from all the Member States, which provide information on a wide array of topics. In doing so, they acquire a direct response from citizens, with regards to the effectiveness of environmental policies, or otherwise.[10]

If Member States fail to apply legal obligations originating from the EU acquis communautaire sources, , the Commission may open infringement procedures to "*ensure the effective application of the Treaties*". The Commission is entitled to follow such procedures in all environmental sectors, and also in relation to

"*Cross-cutting issues such as environmental impact assessment, access to environmental information, public participation in environmental decision-making and liability for environmental damage". The Environmental Implementation Review "aims to improve the common knowledge about existing implementation gaps on EU environmental policy and law in each Member State; provide new solutions complementary to legal enforcement; address the underlying root and often cross-sectoral causes of these gaps; and stimulate exchanges of good practices*".[11]

Apart from this, the Commission provides Member States with a number of benefits from European environmental measures. These include building confidence through better knowledge and responsiveness', and creating a communication platform which is intended to facilitate and enhance the implementation of Environmental Law directives. This is also aided by the 'European Union Network for the Implementation and Enforcement of Environmental Law' (hereunder referred to as IMPEL) which "*encourages the development of enforcement structures and best practices".*[12] Furthermore, a conflict may arise between the standards of Environmental Laws among Member States, and other standards which were previously set out by the Union. Therefore, a system of impact assessment processes is applied, among other systems, to ensure that any future legislation is consistent with sustainable development policies. The main objective here is to prevent conflict in terms of Environmental Law, and enforcing this in an effective manner.[13]

This process of development within the sphere environmental legislation is an ongoing one, whereby the 'European Environment Research and Innovation Policy' aims at continuously advancing its research, in order to provide more effective and sustainable alternatives in terms of climate action, cultural heritage, earth observations, climate-based solutions and system eco-innovation, which will then be transposed into directives to be implemented among Member States. Moreover, this is reinforced by the 'Horizon 2020', which is a research and innovation programme reliant on funding. The main vision of this programme is

10 European Environmental Bureau.
11 European Parliamentary Research Service, 'Developments up to the Single European Act'.
12 Institute for European Environmental Policy, 'Manual of European Environmental Policy' .
13 Ludwig Kramer, 'The Single European Act and Environment Protection: Reflections on several new provisions in Community Law' (2007).

"*to achieve a resource and water efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources and ecosystems*".[14]

It is important to note that European policies on Environmental Law are not only limited to Member States but extend to third parties through trade agreements. In such a situation, the European Union acts as a global influencer through international negotiations, which is reinforced under Article 21 of the TEU, focusing on general provisions on the Union's external action, which states that

"*The Union shall define and pursue common policies and actions, and shall work for a high degree of cooperation in all fields of international relations, in order to: (f) help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development*".[15]

The Union's international influence is attained through three main factors relating to environmental integrity, multilateralism, and a legally binding instrument. The European Union is a global leader in many Environmental Treaties. The Paris Agreement for example, is a global agreement on climate change aimed at limiting global warming. This is to be achieved by setting a number of goals for Member States, in order to enhance state ambition and to tackle the challenges related to climate change. Thus, this would result in the achievement of the objective of preventative action as envisaged in Article 191 of the TFEU in terms of the precautionary principle whereby, "*the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay*".[16] Therefore, through close co-operation between Member States and the Commission, greater environmental progress may be achieved, which will, in turn, benefit all individuals as well as the economic and social development through sustainability and through the effective application of Environmental Law in the European Union.

14 'Climate Action, Environment, Resource Efficiency And Raw Materials - Horizon 2020 - European Commission' (Horizon 2020, 2018).
15 Publications Office, 'Environment and Climate Change'.
16 Statement from the Paris Summit, (21 October 1972).

3. Sustainable development and the Law of Property

3.1. Taking a closer look at Maltese Case Law in relation to ODZ (Outside Development Zone) buildings

As discussed in the previous parts of this paper, International law and EU law have influenced the development of environmental law in Malta. This however has happened mainly with respect to the protection of natural resources such pollution control, biodiversity conservation, climate change and empowerment of NGOS and civil society to participate in environmental decision making. Both International law and EU law have practically no remit with respect to land use and spatial planning. Any influence is only indirect such as through the regulation of habitat conservation and public participation. Sovereignty over natural resources and national interest remain at the discretion of the State and hence spatial planning remains largely almost entirely subject to national legislation.

Ban Ki-Moon, the ex-United Nations Secretary General believes that "s*ustainable development is the pathway to the future we want for all. It offers a framework to generate economic growth, achieve social justice, exercise environmental stewardship and strengthen governance".*[17] The issue regarding Outside Development Zone buildings (hereunder referred to as ODZ) is a contentious one, which is currently, largely debated and discussed in Malta. If we do not manage to find a solution in terms of alternative manners in which we can counteract this problem, we will soon witness a number of negative impacts, whereby the harm caused due to the construction of buildings, is often very difficult to reverse. Noticeably, we are already experiencing a number of changes due to this element of modernisation, which has elicited various protests and petitions, which seek to provide resistance to this issue.

In terms of the Law of Property, there are many regulations which deal with the manner in which an application for the construction of a building is to be approved, however, ultimately, a number of significant environmental changes are being witnessed by Maltese society. Countless development applications are being approved, whilst many civilians and NGOs express vehemently that this kind of development is unsustainable and is jeopradizing the future of our island's environment. They argue that we will have to start limiting this development, since if not, our island will be transformed into an overly built-up area, which will be consumed by the urban sprawl. It is evident that there is a need for change in order to sustain and protect our environment for future generations. This part of the Paper will critically assess certain contentious and topical environmental and spatial planning issues in Malta.

[17] 'Sustainable Development Quotes ' (Brainy Quote, 7th April 2014) <https://www.brainyquote.com/topics/sustainable_development> (accessed 3rd March 2018).

3.2. Analysis into the new legislation: Chapter 552: Development and Planning Act

The Development and Planning Act is found in Chapter 552 of the Laws of Malta, whereby the main purpose of this Act is that of promoting and keeping as its principal goal, the idea of a more sustainable future. It is stated in Article 3 of said Act that it is

"*The duty of the Government to enhance the quality of life for the benefit of the present and future generations, without compromising the ability of future generations to meet their own needs, through a comprehensive sustainable land use planning system*"[18]

The concept of the preservation and maintenance of the country's environment is then laid out in the following sub-articles, wherein development is a contentious issue which must be regulated in such a manner as to prevent causing further damage to future generations, and to safeguard the environment. This is obviously the approach that should be adopted on a national scale in order to enhance and protect our environment. Part III of the Development Act focuses on the establishment of the Planning Authority, which is referred to as the 'Authority' and is then split up into the Executive Council and the Planning Board. This Authority has the power of

"*entering into contracts, of acquiring, holding and disposing of any kind of property for the purposes of its functions, of suing and being sued, and of doing all such things and entering into all such transactions as are incidental or conducive to the exercise or performance of its functions under this Act, including the lending or borrowing of money*[19]". The Planning Authority shall also "*be the principal means whereby the Government shall implement its duties under this Act*".[20]

Article 7 further focuses on the duties related to the Planning Authority, one of them being the fact that they are to succeed in the functions which were initially assigned to the Malta Environment and Planning Authority (MEPA) under the provisions of the Environment and Development Planning Act. The Planning Board, which is one of the two sections which forms the Planning Authority, is in charge of issuing any development permit that may be required under this Act, whilst making sure that both land and sea are put to their best use. Therefore, the pace at which development is set, is all controlled by the Planning Board, through the examination of applications regarding the issuing of licenses, as stipulated in Article 64.[21]

3.3. Limitations to the exercise of the right of ownership under the Law of Property

Under subsidiary legislation, Chapter 552.08, the Development Notification Order, an Outside Development Zone is defined as "*land outside the boundary for development as approved by*

[18] Article 3, Chapter 552 of the Laws of Malta (Development Planning Act).
[19] Article 6(1), Chapter 552 of the Laws of Malta (Development Planning Act).
[20] Article 7(1), Chapter 552 of the Laws of Malta (Development Planning Act).
[21] Article 64, Chapter 552 of the Laws of Malta (Development Planning Act).

Parliament in 2006" [22] Due to the recent increase in the issuing of permits for property development, this issue has been highly-debated and is receiving a lot of media coverage. However, this issue is being viewed in a negative manner, due to its eventual eradication of Malta's landscapes, in order to allow for more development. If we do not find a manner in which development can be carried out in a sustainable way, we will eventually reach a point where it is too late, and the harmful effects would become irreversible, thus permanently harming our environment.

According to an article which was published in 2016, permits regarding 'Outside Development Zones' have increased by a staggering 74% when compared to the previous year. Last year, between January and April, 269 permits were issued in relation to 'Outside Development Zones', when compared to the 154 permits issued in the first three months of 2016. Within those same months, the approval rate for applications was that of 48.1% whereas in 2017, the same rate has shot up to 62.7% - which means that more than half of all ODZ decisions were granted. The below is a Chart portraying statistics of ODZ permits.[23]

Year	Total ODZ Decisions	Permission Granted	Granted as % of Total
2017	429	269	62.7%
2016	320	154	48.1%
2015	332	118	35.5%
2014	295	81	27.5%
2013	307	86	28.0%
2012	494	119	24.1%
2011	440	79	18.0%

For instance, the debate regarding ODZ involves the petrol stations whereby there is an increase in the number of permits being approved. In fact, in 2016, an article was published regarding yet another fuel station which is to be constructed outside the development zone in Marsascala, which will take up approximately 1,500 square metres, replacing agricultural land. Apart from this, the petrol station will cause an eye-sore, especially to the neighbouring residents. Despite strong objections by a number of authorities and NGOs (Non-Governmental Organisations) including the Environment and Resources Authority (hereunder referred to as 'ERA'), '*Din l-Art Helwa*' and '*Front Harsien ODZ*', the project was still approved. In particular, the ERA objected to this application on the basis of the numerous negative environmental impacts, whilst also assessing the fact that this approval will contribute to the urban sprawl, and that similar projects

[22] Article 2, Chapter 552.08 of the Laws of Malta (Development Notification Order).

[23] Yannick Pace, 'ODZ Permits Already Up by 74% Over Last Year ' (Malta Today, 12th April 2017) <https://www.maltatoday.com.mt/environment/townscapes/76148/odz_permits_already_up_by_74_over_last_year> (accessed 6th March 2018).

being approved in other ODZ areas will "*set a precedent for the development of similar proposals within the rural area*"[24]

Earlier this year, a more recent article has stated that another ODZ petrol station application has been approved by the Planning Authority [25]. Despite the existing problem regarding the huge influx of petrol stations, this particular application deals with the construction of yet another petrol station, which is to be built just down the road from an existing one. According to the layout of the plans, it is designed in such a manner as to enable easier access and to reduce traffic congestion, however the fact that there already exists a petrol station in the same road is a worrying concern. Similar to the aforementioned project, this project also received a number of objections, particularly by 'Nature Trust Malta'. This NGO strongly objected to the approval of this project primarily due to the fact that there was another fuel station just 350 metres down the road. Despite this, said project still qualified for an Environment Impact Assessment (EIA) which anticipated the negative effects of this proposal, wherein the EIA requirement "*is without prejudice to the overall objection to the proposal from an environmental point of view*" [26]

[24] Philip Leone Ganado, 'ODZ Fuel Station is Approved' (Times of Malta, 22th December 2017) https://www.timesofmalta.com/articles/view/20171222/local/odz-fuel-station-is-approved.666248 (accessed 7th March 2018).

[25] 'Yet Another ODZ Fuel Station Application Going Through The Planning Process - The Malta Independent' (Independent.com.mt, 2018) <http://www.independent.com.mt/articles/2018-01-18/local-news/Yet-another-ODZ-fuel-station-application-going-through-the-planning-process-6736183746> accessed 8 April 2018.

[26] Kevin Schembri Orlando, 'Yet Another ODZ Fuel Station Application Going Through the Planning Process' (Malta Independent, 18th January 2018) <http://www.independent.com.mt/articles/2018-01-18/local-news/Yet-another-ODZ-fuel-station-application-going-through-the-planning-process-6736183746> (accessed 11th March 2018).

4. Governmental approach to energy efficiency: What is the Government of Malta offering to large-scale firms operating in Malta, when it comes to incentivising firms to be more energy efficient?

4.1. Analysis into the schemes and incentive guidelines released by Malta Enterprise

The need for improvement in energy efficiency in buildings is high both on national and international political agendas, especially when it comes to the high energy bills paid by developed countries. Nevertheless, such agendas to better the energy efficiency of buildings through several applications come at a premium.

Prior to Malta's accession into the European Union, investing in technology that enabled energy efficient measures were practically nill in the local energy scene. This is due to the high prices associated with such energy efficiency measures which were considered to be exorbitant with an unreasonable payback period. However, later on, upon Malta's accession into the European Union, Malta had to abide by several international agreements and obligations as a Member State of the Union. These included the Renewable Energy Directive (European Parliament 2001), the Energy Performance of Buildings Directive (European Parliament 2002), -- To encourage energy efficiency implementation, he Government started developing incentives which were all aimed at increasing the uptake of these systems and applications.. There seems to be a coherent approach between these "*concrete efforts*"[27] and the need to ameliorate the energy efficiency of buildings in general, especially factories and industries.

Malta has made use of several financial incentives through which it aims to guide and promote the energy efficiency technology market, and even though such incentives did not function well at the beginning, they were greatly welcomed by both the general public and those in the commercial sector. In fact, these financial incentives have helped to shape the market into what it is today, whilst also affecting the public's view of energy efficiency. Some of these incentives have been clearly successful. As an example one may mention the photovoltaic panels used both on private buildings such as homes, and more importantly on commercial roofs of companies and factories. This all helps to increase awareness with regards to exploiting energy efficient appliances and lighting. Other measures such as the installation of double-glazed windows and doors, or roof insulation, seem to have been less successful due to a lack of knowledge on such means for greater energy efficiency, even though they are gaining popularity amongst those in the building industry.

[27] 'Energy-Efficiency And Renewable Energy Financial Incentives: Public Perception In Malta – Top-Down, Or Bottom-Up Approach?'(um.edu.mt, 2018).

4.2. The main environmental support measures by Malta Enterprise

Malta Enterprise provides several support measures and incentives for entrapreneurs operating in Malta to help them grow and expand. This is not just for an increase in the value added and employment, but also for the development of the industry. These incentives can be beneficial to a variety of enterprises like those involved in manufacturing, call centres, healthcare, and pharmaceuticals amongst others. In fact, Malta Enterprise administered a number of EU funded schemes to this effect. These schemes have the specific objective to improve energy efficiency in industrial and commercial buildings. Most of these schemes are aimed at helping the industry in terms of providing financial aid in order to set energy saving measures or renewable energy resources.

When using the Malta Enterprise website, under the Support Measures tab, one may find a list of the measures and services provided by Malta Enterprise itself. In fact, there is a list of 28 support measures for enterprises in Malta, some of which are specifically targeted towards the energy efficiency and expansion of enterprises. As part of its main aims, Malta Enterprise constantly works to find solutions for problems that businesses might encounter, and the need to be more energy efficient is one of such problems.

The 'Micro Invest Scheme' is a measure that aims to help entrepreneurs expand their business by investing sensibly, to be innovative and implement compliance directives, or develop their functioning and operations. This scheme targets not only big or government enterprises, but also self-employed individuals, micro-enterprises and even partnerships. These would be supported through a tax credit, amounting up to 45% on the eligible expenditure which includes the wages of newly recruited employees. In total, the aid granted to each entity would amount to up to €30,000 over a period of three years. For undertakings operating in Gozo, the tax credit can amount to 65%, whereby tax credits amounts to €50,000 over the same period of three years. This is also the case for female-owned undertakings in both Malta and Gozo.[28] This scheme can be easily made use of upon an application which may be accessed on the Malta Enterprise website. [29] Those who apply for this scheme would benefit as they would be able to invest in more energy efficient appliances and systems.

The Investment Aid Tax Credits are aimed at helping the industrial and economic development of Malta, by facilitating investments that encourage new establishments to be set up, together with the growth of existing enterprises. These incentive guidelines came into effect on the 1st of January 2018, and will be effective until the 31st of December 2020. In order to apply for this scheme, there ought to be certain qualifying economic activities which deal with waste treatment, eco-innovation and environmental solutions. These include waste treatment through processes

[28] Malta Enterprise and others, 'Incentives By The Malta Enterprise - Features - The Accountant' (*The Accountant*, 2018) <https://theaccountant.org.mt/incentives-by-the-malta-enterprise-features/> accessed 6 March 2018.

[29] 'Micro Invest | Malta Enterprise' (*Maltaenterprise.com*, 2016) <https://www.maltaenterprise.com/support/micro-invest> accessed 6 March 2018.

that change the characteristics of the waste, so as to reduce its volume or its dangerous nature to facilitate its handling, or to enhance its recovery, even in its sorting. On the other hand, eco-innovation services try to notably prevent, reduce or reverse the negative impacts of human activities on the environment, thus resulting in greater sustainable development, by reducing the impacts on the environment or achieving a more efficient and responsible use of natural resources. [30]

The 'Research and Development incentive' supports industrial research and experimental development in order to gain more knowledge on the development of innovative products and solutions. [31] The 'Investment Aid for High-Efficiency Cogeneration incentive' was brought about through a collaboration between Malta Enterprise and the Energy and Water Agency. These are aimed at assisting enterprises in the form of a tax credit to invest in cogeneration equipment for energy efficient solutions that generate thermal, electrical and/or mechanical energy at the same time. [32] Through this scheme, four investments may be supported by the Corporation; (1) new equipment fitted with an existing energy transformation equipment which should result in a high-efficiency cogeneration process, (2) new equipment classified as a high-efficiency cogeneration process, (3) an upgrade to an existing cogeneration process which would render it as a high-efficiency process or (4) an upgrade to an existing cogeneration process which would improve the efficiency. When it comes to the new cogeneration equipment, the investment must provide overall primary energy savings when compared to previous productions of heat and electricity. Undertakings claiming the tax credits would only be eligible if the Primary Energy Savings ratio is greater than 10% unless the investment is classified as small scale or a micro-cogeneration unit. [33]

It is important to note that in Malta, the private sector runs alongside these Government driven schemes through several banking operators that also help these industries to improve their energy efficiency. A number of banks based in Malta offer loans and banking products to facilitate the purchase and installation of energy efficient products. Even though there are no proper statistics that show the success of these schemes provided by the private sector, it was established that most of them have done well in promoting energy efficiency in buildings.

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30 'Incentive Guidelines - Investment Aid Tax Credits 2014 - 2020' (*Maltaenterprise.com*, 2014) <https://www.maltaenterprise.com/sites/default/files/Incentive%20Guidelines%20Version%203.2%2009.02.2018.pdf> accessed 6 March 2018.

31 'Research And Development 2014 - 2020 | Malta Enterprise' (*Maltaenterprise.com*, 2016) <https://www.maltaenterprise.com/support/research-and-development-2014-2020> accessed 6 March 2018.

32 'Investment Aid For High-Efficiency Cogeneration | Malta Enterprise' (*Maltaenterprise.com*, 2016) <https://www.maltaenterprise.com/support/investment-aid-high-efficiency-cogeneration> accessed 6 March 2018.

33 'Incentive Guidelines - Investment Aid For High-Efficiency Cogeneration' (*Maltaenterprise.com*, 2016) <https://www.maltaenterprise.com/sites/default/files/Investment%20Aid%20for%20High%20Efficiency%20Cogeneration%20Incentive%20Guidelines%20Version%202%2027%2010%202016.pdf> accessed 6 March 2018.

4.3. A Case Study: Simonds Farsons Cisk plc. operating in Malta, in relation to implemented schemes to improve energy efficiency

Several firms in Malta are implementing schemes in terms of energy efficiency. One such local firm, Farsons plc. has embarked on an ambitious green policy which aims to use production methods that guarantee also environmental sustainability. Some of these methods include the installation of Photovoltaic Panels, water treatment, refrigeration, and recovery of spent grains and spent yeast. These systems were mainly introduced or upgraded in 2013, together with the renovated truck fleet which was introduced later on in 2015.

At Farsons, energy is used and produced through the installation of Photovoltaic Panels. The company has a 309 KWp Photovoltaic system that was commissioned in May of 2013. These panels produce more than 500 MWh annually, which is equivalent to the energy needed to power 100 domestic houses. This has helped the environment since it avoids approximately 853 tons of Carbon Dioxide emissions from being discharged into our atmosphere. Due to the great water volume and quality requirements at Farsons, a new water treatment system was set up in 2013 which is comprised of four reverse osmosis plants. Efficiency was improved through the collection of brine, which is the reject water from the first pass to the second pass reverse osmosis plants. This brine collected is pumped through a brackish water reverse osmosis plant so as to generate washing water which can then be reused. This plant also helped to reduce the energy consumption due to the fact that the pumping process is carried out under variable frequency drive control. In 2013, a new refrigeration system was also installed with a 1000 KW refrigeration power rating. This was needed due to the fact that the production of beverages requires a high capacity of both heat energy and refrigeration that can be costly in the sense of both money and energy. This plant also makes use of variable frequency drives in order to ensure maximum possible efficiency in all conditions of operation. This system has resulted in the significant reduction of electrical energy used in the engine room by half of what it used to be.

Apart from the treated water, the Brewing process uses great quantities of malt as one of its major raw material. The grains from the malt are separated from the wort produced during the mashing process, which is a liquid extract used as a substrate for yeast to ferment the brew into beer. The spent grains are then recovered in a stainless steel silo. The recovery and the sale of the spent grains ensures that nothing is wasted from the imported agricultural produce and also serves to support the local dairy industry. The excess yeast produced during the brewing process, even though it is on a small scale in Malta and thus cannot support a specialised food industry, is invested in a yeast thermo-lysing plant to destroy the yeast's vitality. With this, Farsons are

providing saleable and sterile food which can be sold to boost animal fodder protein and vitamin levels, thereby, also supporting the locally reared animal husbandry. [34]

Farsons also continues to invest in its distribution fleet so as to reduce emissions into the atmosphere as much as possible. It was one of the first companies to introduce ten new EURO VI trucks which were added to its modern EURO VI and V fleet to distribute its products around Malta. To help minimise emissions, the planning of routes and fuel consumption of the fleet are closely monitored in order to maximise efficiency. Tests are also being carried out on some of the trucks in relation to the use of the LPG fuel, which is said to be more environmentally friendly. This would help to further reduce Carbon Dioxide emissions in our atmosphere significantly.

4.4. Taking a critical approach: issues which arise when large-scale firms operating in Malta are not provided with enough incentives in order to operate in an energy efficient manner

In other countries, where the national Government does not focus on incentivising firms in order to operate in a more energy efficient manner, a number of issues may arise. Due to the fact that there is a lack of incentives, firms will generally tend to opt for the ordinary energy sources, which tend to be harmful to the environment. Large-scale firms have the potential to not only decrease the damage which is being done to the environment, but also have the power to influence a society and industry in order to raise awareness in this regard. Therefore, the Government should see this in such a way as to provide such firms with enough incentives and financial aid, in order to continue working towards a greener environment.

Despite the advances that have been made, this is still an area which needs to be improved upon and where more work needs to be done. Such measures should not only be made more financially attractive but emphasis should be put on the importance of educating the general public on the significance of such measures so as to achieve more sustainable building methods and greater energy efficiency. In conclusion it can be said that having greater awareness through education, and having more governmental schemes that aim at shifting industries and commercial buildings towards using more energy efficient technology in Malta, this would add value, whilst also contributing to greener jobs.

34 Simonds Farsons Cisk plc. , 'Environmental Sustainability' (*Farsons*) <http://www.farsons.com/en/sustainability-in-the-environment> accessed 3rd March 2018.

5. A comparative assessment of the Maltese Legal Framework and that of other European States in terms of recycling systems

5.1. Brief overview of Malta's recycling schemes and system

The implementation of the Waste Framework Directive, in Malta has led to the regulation of recycling and on the reuse of household waste. Many European States have implementing stricter and more efficient recycling systems than Malta. The advancement in technology has greatly aided this recycling conquest as most recycling systems use heavy machinery with which more precision is ensured. This industry is quickly growing as nowadays, Governments are educating their citizens on the importance of recycling and are even providing a number of incentives. A recycling system should be tailor-made for the country in order to suit its needs properly, and therefore even across Europe, no country uses the exact same recycling system, even though their aim is one and the same. According to statistics compiled by 'Eurostat' in 2014, the States with the least household waste are Estonia, Slovenia and Belgium, meaning that they had the most effective waste systems. [35] Malta however was ranked second, right after Denmark, in terms of generating the most municipal waste in Europe. This meant that on average, each person compiled 647kg of waste, with only 7% of that being recycled. Even though Malta is a small island, we are still striving to improve these results, by bettering and constantly improving our waste and recycling system. [36]

In this chapter, as assessment will be carried out in terms of different recycling systems in Europe, which will then be compared to the Maltese systems. Legal Notice 549.45 includes a set of subsidiary legislation on Waste Management (Activity Registration). These regulations focused on setting parameters for any organisation, public or private, in terms of waste regulation, whilst also highlighting the importance of the proper disposal of waste, batteries and accumulators which can be very harmful if not disposed of in a correct manner.37 The 'GreenPak Cooperative' was put together in 2004 and is mainly concerned with "post-consumer waste recovery". 38 This organisation targets most parts of Malta, by collecting waste from approximately 42 localities. The range of types of waste materials collected is also quite impressive, as apart from bring-in sites and glass waste collection, they also work with household waste. Businesses in certain localities can also benefit from their expertise as they also provide collection in this regard.

Apart from making sure that most of the waste in Malta is collected in a sustainable manner, GreenPak also strives to educate Maltese people through leaflets and several television appearances. The organisation also provides a helpline which is constantly available, and actively works with businesses in order to ensure that they are being as eco-friendly as possible. One of their most innovative schemes is known as '*Batree*', which is now even substituting the previous

35 Independent.com.mt. (2018). *Malta generated second highest amount of municipal waste per person in EU in 2016 - The Malta Independent.*

36 Zerowasteeurope.eu. (2018). *And the best waste performing country in Europe is… Estonia.*

37 Justice Services (2018).

38 GreenPak Malta- Recycling, Packaging, WEEE, Waste, ERA (2018).

Government scheme that was in place. The Cooperative placed a number of recycling bins for used batteries, in areas such as supermarkets or schools, where people could drop off their used batteries. If disposed of incorrectly, batteries can harm both humans and the environment, due to their harmful substances and composition. This battery scheme is still very popular and is constantly being revised to fit today's needs.

'Wasteserv' is a public company set up in 2002, to integrate waste management in people's behavioural patterns by offering incentives such as "*collect and win*" and the "*good neighbouring scheme*". The organisation is constantly working towards developing technology which is required for the protection of environment. Additionally, 'Wasteserv' promotes recycling and sustainable waste management, mainly on its social media platforms. The company also works with several key players in today's environmental field, including the Government, and owns several waste managing plants such as the 'Maghtab Environmental Complex', the 'Thermal Treatment Facility' and 'Sant' Antin Waste treatment plant'. The latter is the company's main base of operation, which is split into two sectors, the Mechanical treatment plant and the Materials Recovery Facility. The mechanical treatment plant mainly deals with the formation of compost through the separation of organic waste, whilst the Materials Recovery Facility separates plastic materials before shipping. 'Wasteserv' also sells a variety of recyclable materials, ranging from plastics to non-ferrous materials. [39]

5.2. "Pfand" system in Germany: would this be suitable for Malta and for the Maltese legal system?

Germany's recycling system was legislatively introduced in 2003, and is known as the '*Pfand*' system. '*Pfand*', meaning 'deposit' in English, is the paying of an extra fee when buying bottled drinks mainly soft drinks and beer, which will then be refunded when the empty bottle is returned. This is done in order to encourage companies to bottle their goods in recyclable containers, as these can be used approximately twenty-five more times in the case of plastic, and fifty times in the case of glass. By producing less bottles and re-using the ones already produced, carbon dioxide emissions are said to be reduced by half their amount.

The '*Pfand*' system is a cycle which begins with the producer and ends with the consumer, where both are essential players in order to ensure the proper functioning of this system. As the producers use recyclable bottles, a small fee is incurred, which is then paid by the consumer. This charge is applicable both to multi-use and single-use bottles, although those bottles which are multi-use, tend to have a higher fee. The retailer sells the products at a higher price and after the

[39] 'Wasteserv Malta' (*Wasteservmalta.com*, 2018) <http://www.wasteservmalta.com> accessed 13 March 2018.

product has been used, the consumer can return the recyclable bottles he bought and get his money back. [40]

Although this system has proven to be a successful one, a number of problems have also arisen. There have been certain cases where for example a store chooses not to accept returned bottles, even though this is an obligation under national law. It is essential that bottles contain the '*Pfand*' sticker for them to be accepted. Another issue is that even though multi-use bottles are usually returned, those bottles which are single-use are frequently thrown away, and thus the retailer would be making a profit from this. Recent studies have shown that over time, less people are using this system and it may eventually stop functioning in its entirety. Although this system has shown to be problematic, it could actually prove to function well in Malta. A similar system was in place in the past, when we used to use glass bottles however, this has recently stopped. This system is said to be returning in 2019, as we aim to collect more plastic waste throughout the country. [41]

5.3. Brief analysis into Sweden's recycling system

Sweden's recycling system is known as being a revolutionary and highly-effective one. Drastic improvements have been evident over the decades, where today, 99% of their household waste is being recycled. In fact, the Swedish system is so effective, that in 2014 they even imported waste from other countries in order to produce more energy. The Swedish citizens themselves are in fact responsible for the success of their system, as they themselves carry out the recycling process by separating their waste before taking it to bins stationed near their household.

Weine Wiqvist, the CEO of the 'Swedish Waste Management and Recycling Association' believes that it would be more efficient to recycle and produce other products from waste. Apart from recycling plastic, paper, glass and batteries, the Swedes also recycle food waste, which is then composted and turned into soil or biogas. This is eventually used to fuel the rubbish trucks that go around the cities collecting dangerous waste materials such as batteries. Medicine is also recycled by pharmacies in Sweden, as customers may return any medicine that has not been used. Since waste energy is not very expensive, this has become Sweden's main source of energy throughout the country. After the incineration process takes place, the ashes are further separated and recycled. Those particles which could not be turned to ash are also used as gravel in the construction of roads. The smoke emitted goes through a filtration process and the sludge left, is used to refill unused mines. As one can notice, nothing is wasted in Sweden and for every step of the recycling system, there is another process that deals with the remains of a product,

[40] Live Work Germany. (2018). How Does The German Pfand System Work, And Is It Effective? <https://liveworkgermany.com/2017/05/how-does-the-german-pfand-system-work-and-is-it-effective/> accessed 11 March 2018.

[41] Independent.com.mt. (2018). Price of soft drinks to increase as part of plastic bottle return scheme, PM announces - The Malta Independent <http://www.independent.com.mt/articles/2017-10-08/local-news/PN-challenge-to-IVF-leave-law-is-vindictive-action-against-minority-Muscat-6736179951> accessed 11 March 2018.

until it is eventually reused or completely distributed throughout the system. The 'Swedish Environmental Protection Agency' actively works with other companies in order to aid in waste management. When it comes to Malta's recycling system, it is evident that a number of processes, similar to those in Sweden, are actually being carried out in Malta. However, there is still a long way to go in terms of converting to a more effective and sustainable waste management system. [42]

Noticeably however, a project of this size would require extensive funding and, therefore this can only be achieved through external financial aid. Due to the fact that there are various stages in this recycling system, we would also need a vast amount of space dedicated solely to this and unfortunately, due to our dense population, this may prove to be a challenge in Malta. Another issue is that Malta does not have one universal system implemented throughout the country, but functions on a regional-basis, where local councils work with private companies to collect waste. Therefore, each company follows its own policies and instructions, thus leading to a rather scattered and fragmented system. Undoubtedly, Malta could learn a lot from the Swedish system, and this could actually prove to function successfully in Malta, however, a number of changes would be necessary, both from the Government, and also from the public in general.

5.4. A legislative approach of waste management in Austria

Since 1990, when the Federal Waste Management Act was introduced, Austria has paid close attention to regulating certain areas, such as construction and packaging waste. Additionally, after the banning of the process of landfilling with regards to certain types of waste, it was evident that the recycling process became more prominent. The concept of recycling became more popular, and this was also promoted in terms of educational programs, and incentives provided by the Government to Austrian citizens. The aim here has always been to preserve primary resources which are non-renewable through schemes such as "*Prevention of dissipation of pollutants*" and the "*Guarantee of recycling products with high quality*".[43]

Recently, more attention has been directed towards the management of food waste, as this is generally the largest factor of household waste. In 2011, the 'Waste Prevention Programme' was implemented, which provided a basis for the country's futuristic vision, which was to be developed by 2020. Vienna, in particular, is supporting three schemes targeted at reducing consumer waste. The web flea market is an "*internet-based exchange platform*" for consumer and building materials. This goes hand in hand with their 'Promotion of lifestyle change' scheme, one that encourages people to spend their money on cultural experiences and services instead of materialistic items. They also have the 'Repair and Services Centre' which is a chain of 23 shops

[42] The Swedish recycling revolution <https://sweden.se/nature/the-swedish-recycling-revolution/> accessed 11 March 2018.

[43] Mr. Berlakovich Nikolaus., 'Austria Is Among EU Champion Countries For Waste Recycling. Analysis Of This Success By The Austrian Minister Of The Environment' Waste recycling in Austria: analysis of the success.

which repair broken household appliances, which in turn, will reduce the amount of waste created. They also have a number of schemes which are intended for businesses and their waste; the '*OekoKauf Wien*' Scheme ('EcoBuy Vienna') is an example of such. [44] Apart from food waste, Austria also focuses on the waste related to demolition and construction works. The Government encourages construction workers to use modern technology in order to build well-structured buildings, whilst of course generating the least amount of waste possible. An ordinance targeting this aspect of waste management is being advocated, in order to provide even stricter regulations. [45]

When assuming a comparative approach, it is evident that both Malta and Austria are currently working on very similar projects in order to stabilise waste management and reduce waste. The 'Repair and Services Centre' initiative which operates in Austria, could actually prove to be very successful in Malta, yet this has not yet been implemented, or even discussed. Such an initiative would definitely contribute to the reduction of waste in terms of electrical and household appliances. It is imperative that education in this regard is given more attention, since essentially, this is the backbone of a country's mentality and approach towards the environment. New laws and schemes must continue to be drawn up, in order to enhance Malta's progress in this sector, whilst also eventually contributing to an effective and efficient waste management system.

44 'Oekokauf Wien' (*Wien.gv.at*, 2018) <https://www.wien.gv.at/english/environment/protection/pdf/oekokauf-engl.pdf> accessed 13 March 2018.

45 Ec.europa.eu. (2018) <http://ec.europa.eu/environment/waste/prevention/pdf/Vienna_Factsheet.pdf> accessed 11 March 2018.

6. Emissions Trading

6.1. General overview on the concept of Emissions Trading

In very basic terms, emissions trading is a market mechanism to limit and control pollution. Emissions trading is often referred to as "*cap-and-trade*" and focuses on reducing pollution through a market-based approach, whereby a cap (or limit) on emissions is set, and permits are subsequently created up to the level of this particular cap. These permits are referred to as "*tradable pollution permits*", and the main aim of such a mechanism is to add a profit motive as an incentive for good performance. This is effectively putting a price on pollution, whilst also creating flexibility when it comes to how, and where pollution is reduced. Furthermore, by setting such an allowance, it ensures that the environmental goal is met, and that the tradable allowances provide increased flexibility for individual emission sources to set their own mechanisms. These allowances can be bought and sold in an allowance market, and therefore, emissions trading is seen as a market-based approach. By setting a limit on allowances, this creates scarcity, which in turn, generates economic value, providing an incentive to reduce emissions. A cap-and-trade system reduces compliance costs, whilst also incentivising emission reduction, and spurring technological innovation and energy efficiency. Emissions trading was developed in the 1970s and 1980s in the US, in order to combat acid rain, it is applied to regulate green house gas emssions from power generation industrial processes and aviation in the EU.. This approach to reduce pollution has proven to be effective in many ways, and has been used successfully in protecting human health and the environment. [46]

The first aspect of the method involved in emissions trading, is to set an emission goal; this is usually established by the Government, and allowances are subsequently distributed to affected sources. Following this, a compliance strategy is developed, where the affected sources determine the manner in which emissions shall be reduced, generally by applying tradable compliance instruments. A measurement of emissions is then assigned the so called "quota" together with other relevant data. Based on this data, a compliance assessment is carried out, and the Government levies automatic penalties for non-compliance. [47] Following a progress report delivered by the US EPA (Environmental Protection Agency), the success of these programs is evident through substantial reductions in emissions of sulphur dioxide (SO_2) and nitrogen oxides (NO_x), whilst also improving air quality.[48] When discussing the concept of emissions trading, it is vital to mention a number of advantages related to this scheme; due to the overall pollution limit which is established, there is a certain level of environmental certainty which

[46] 'What Is Emissions Trading? | US EPA' (*US EPA*, 2018) <https://www.epa.gov/emissions-trading-resources/what-emissions-trading> accessed 10 March 2018.

[47] 'Emissions Trading 101' <https://www.youtube.com/watch?v=Haqk6xcEoyE&feature=youtu.be&rel=0> accessed 10 March 2018.

[48] 'Progress Report | Clean Air Markets | US Environmental Protection Agency' (*Www3.epa.gov*, 2018) <https://www3.epa.gov/airmarkets/progress/reports/index.html> accessed 10 March 2018.

comes about, ensuring that effective progress will be evident in this regard. Additionally, due to the incentives for efficiency and innovation, implementation costs are lowered. When it comes to developing a compliance strategy, there is flexibility for individual emissions sources when it comes to ensuring compliance.

The Kyoto Protocol is an International Treaty which was established in 1997, and came into force eight years later, in 2005. In terms of emissions trading, the Kyoto Protocol establishes the Emissions Trading System (ETS) for greenhouse gases on a global level, relating to the six major greenhouse gases. Noticeably, however, this never actually materialized between the states party to the Protocol. [49]

6.2. Analysis into one of the major pillars of the European Union Climate Policy: the EU Emissions Trading Scheme

The European Union's Emissions Trading System (hereunder referred to as 'ETS'), was launched in 2005 as a major pillar of the Union's climate policy and is renowned as being the world's largest scheme for trading greenhouse gas emission allowances. Companies must provide measurements and reports with regards to their carbon emissions and are required to provide one allowance for every tonne they release; companies can also trade these allowances, incentivising them to reduce their emissions. The EU ETS has proven to be a successful scheme by capping half of Europe's carbon emissions. Following a study carried out, it was concluded that between 2005 and 2007, the ETS reduced emissions by approximately 210 million tonnes across Europe. [50]

Emissions trading systems are highly cost-effective, whereby trade encourages markets to find the cheapest ways to reduce emissions. The EU ETS through the establishment of GHG emission allocated a financial value to each tonne of emissions saved, and this also worked towards the promotion of investment in clean, low-carbon technologies. The EU ETS also provides a solid platform for the eventual development of an international carbon market. China, South Korea, Canada, Japan, New Zealand, Switzerland and the US already have a number of national or regional systems, however the international carbon market is said to develop through a bottom-up approach, whereby the EU ETS will be linked to other international systems, with a common aim, to reduce the amount of emissions. The EU ETS currently operates in 28 European countries, together with Iceland, Liechtenstein and Norway, and covers approximately 45% of the EU's greenhouse gas emissions.

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[49] Office of Air and Radiation, 'Clearing The Air: The Facts About Capping And Trading Emissions' (2002) <https://www.epa.gov/sites/production/files/2016-03/documents/clearingtheair.pdf> accessed 10 March 2018.

[50] 'What Is The Emissions Trading Scheme And Does It Work?' (*the Guardian*, 2018) <https://www.theguardian.com/environment/2011/jun/07/ets-emissions-trading> accessed 11 March 2018.

The EU ETS is said to consist of four distinct trading periods, whereby development is carried out in stages. The first trading period was between 2005 and 2007, which constituted a learning process and established the system as one of the largest in the carbon market. Following this, the second period was between 2008 and 2012, where the system saw the addition of three new countries, Iceland, Norway and Liechtenstein. We are presently in the third trading period, that is between 2013 and 2020, whereby we are seeing a progressive shift towards the auctioning of allowances in place of cost-free allocation. The final trading period is said to be between 2021 and 2030, where the EU ETS will be revised, as per a legislative proposal which was presented by the European Commission back in 2015. [51]

The EU ETS is definitely still considered as being a highly-relevant system, whereby the system is now in its third phase, bringing about a number of changes. Some of the central changes include the introduction of a single, EU-wide cap on emissions which replaces the previous system of national caps, together with the auctioning method for allocating allowances, which replaces the previous system of free allocation. Apart from this, a set of unified allocation rules now apply to the allowances which are still given away for free. This phase also saw the inclusion of more sectors and gases, together with another addition to the system, when Croatia joined back in 2013. [52]

6.3. How has Malta taken an active role in implementing emission trading schemes developed by the European Union?

Emissions trading principles became the basis for international emissions trading as established by Article 17 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCC), wherein the trading of emissions between parties became quantified, including emission limitations and reduction targets. Entities can choose to reduce emissions in two ways: either on site, or else through the purchase of permits. This depends mainly on which approach is more cost-effective for the particular entity. Under the latter option, the individual purchasing the permits is essentially paying for polluting, whilst the seller is being rewarded for reducing emissions. The European Union Emissions Trading Scheme (EU ETS) was established in order to address one of the fundamental environmental issues, that of reducing greenhouse gas emissions. This has led to the establishment of the "*largest multi-country and multi-sector emissions trading scheme, covering large, stationary, greenhouse gas-emitting industrial installations and, as from 2012, aviation activities*". Some of the states participating in this scheme include Norway, Iceland and Liechtenstein. [53] The Emissions Trading Scheme was one of the fundamental projects which was deemed to underpin the European Union's policy to combat

51 'The EU Emissions Trading System (EU ETS)'.

52 'EU Emissions Trading System (EU ETS) - Climate Action - European Commission' (*Climate Action - European Commission*, 2018) <https://ec.europa.eu/clima/policies/ets_en> accessed 11 March 2018.

53 'Emissions Trading – Introduction | Malta Resources Authority' (*Mra.org.mt*, 2018) <http://mra.org.mt/climate-%20change/emissions-trading-intro/> accessed 10 March 2018.

climate change, focusing primarily on the reduction of industrial greenhouse gas emissions in a cost-effective manner.

The EU ETS was introduced through Directive 2003/87/EC which set out the legal framework, in order to enhance the implementation of the EU ETS in Member States. The directive outlines the various roles and responsibilities associated to the primary members in the scheme, focusing also on those associated to competent authorities and operators. Apart from this, the directive also aims at providing a set of harmonised rules in order to outline the essential functions of the scheme. Directive 2004/101/EC, is generally referred to as the 'Linking Directive' as it updated and amended the existing directive, in order to permit operators to use credits derived from projects implemented under the Kyoto Protocol project mechanisms for compliance with their obligations. Following this, Directive 2008/101/EC provided for the inclusion of aviation activities in the EU ETS. Together with this, a number of concepts were also introduced in this regard, including the EU-wise harmonised cap setting and allocation rules, the concept of benchmarking where free allocation is applicable and a set of compulsory partial auctioning of allowances rules; these concepts were eventually expanded and also implemented in industrial sectors.

Directive 2009/29/EC was considered as falling under the Climate Change and Energy Package of 2009, as it focused particularly on industrial installations. The main aim under this Directive, was to include new industrial sectors and gases from certain sectors. Noticeably, Malta has also taken an active role in implementing the Emission Trading Scheme, as developed by the European Union. Legal Notice 434 (2013), transposes the Directive into Maltese national law in relation to stationary installations, whilst Legal Notice 403 (2012) relates to aviation activities. The Climate Change Unit is responsible for the general implementation and administration of the EU ETS in Malta. In 2015, the Regulator for Energy and Water Services Act identified the operation of the emissions trading scheme as one of its prominent responsibilities.

7. A new phenomenon: Hybrid cars

7.1. Brief overview of the concept of environmental friendly vehicles

A hybrid car may be described as one that employs more than one form of energy to achieve movement. Thus, hybrid cars usually have one internal-combustion engine as well as a fuel tank accompanied by a series of electric motors and a lithium ion battery pack. Unlike electric cars, hybrid cars still burn gasoline, but differently to a normal car that only hosts an internal-combustion engine, hybrids capture the energy which usually goes to waste, using its electronics to power the battery pack and propel the car forward thus making the vehicle more efficient. Hybrid systems have been used for many years with the first diesel-electric ship being launched as early as 1903 and the first petrol-electric locomotives emerging during World War One. Such systems have proven to reduce costs and waste of energy drastically, and thus, have been also employed in the field of submarines, trucks, buses, motorbike, cars, military vehicles such as tanks and many others. [54]

Modern-day production hybrid cars use petrol-electric hybrid systems to achieve propulsion. Although a diesel-electric hybrid system, such as the one used in modern-day ships and locomotives would prove to be more fuel efficient, car producers have avoided such a hybrid system due to the added cost of producing a diesel engine in conjunction with a very expensive electric motor. One may also note that there are various types of hybrid systems that can be used to reduce emissions and increase efficiency of combustion engines. Additionally, there are also different systems in which internal-combustion engines are eliminated and the car is propelled entirely by an electric motor, which receives energy from a large lithium-ion battery pack which is charged from a mains energy supply, or an available charging station spread around the country. Hydrogen internal combustion engines are another environmentally sustainable approach towards transport. However, these types of engines are net yet fully developed due to problems mainly regarding transportation and storage. Hydrogen engines are an alternative with great potential due to the fact that emissions are greatly reduced, as the combustion of hydrogen only produces water, and in some cases, very low amounts of nitrogen oxides. [55]

7.2. Impacts of Hybrid cars

Environmentally speaking, hybrid electric cars (HEV) are commended for their fuel efficiency, as well as their low amount of emission production. Most hybrid electric cars will achieve twice the miles per gallon when compared to the conventional version of the same car, even with the added weight of an electric motor and battery pack. Hybrid cars also leave great impacts when it comes to emissions. Smog-producing gases including nitrogen oxides, hydrocarbons, and other volatile organic compounds, leave an awfully negative effect on the environment, as well as reducing the air quality. Areas where cars are largely concentrated, such

[54] Edmunds.
[55] "Hydrogen Engine - Pure Energy Centre".

as Shanghai, have proven that smog and air pollution are a pressing problem that must be addressed urgently. One may think that hybrid cars play a crucial role in the reduction of global emissions from cars, and although negative emissions are reduced by such hybrid systems, the figures are in fact much less than one may assume. Research has shown that compact hybrids produce only up to 10% less emissions than compact cars that contain an internal-combustion engine, yet the situation improves with regards medium-sized cars, medium sized sports-utility vehicles (SUV) and large SUVs where hybrid systems have been shown to reduce emissions by up to 15%, 19% and 21% respectively, again when being compared to their conventional counterparts.[56]

Plug-in hybrid cars, otherwise known as PHEVs create a whole new playing field due to their ability to be charged by any 120-volt power source, either from mains or alternative charging stations, thus creating a second fuel source. Such hybrid systems are different to the prior ones, as when the battery is charged up, the electric motor is used as a backup. On the other hand, it uses the combustion engine for propulsion in such a case that no electric energy is available. Studies have shown that due to the electric motor being the primary source of locomotion, such systems are capable of over one hundred miles to the gallon and produce very low emissions. To put that in perspective, the average fuel consumption calculated for medium-sized cars in 2016 was twenty-six miles per gallon, significantly less than a Toyota Prius Prime. On the other hand, it is important to note that the impact of these cars on the environment is very much dependant on the power plants that supply the electrical grid with power. In a place where the electrical grid is supplied greatly by sustainable and clean sources, the impact of these PHEVs on the environment is significantly less than in a country where the electrical grid is powered by the burning of fossil fuels such as coal and heavy fuel oil, as in the primary case, neither the car nor the plant produce harmful emissions. Studies from the Ohio State University have shown that in cases where the burning of fossil fuels is used to power the gird and in turn, charge the batteries in the car, the emissions from the plant to charge the car can be just as harmful as emissions from a combustion engine. Thus, in Malta, such a hybrid system could prove to be ineffective with regards to lowering the total amount of harmful emissions, as more than 90%[57] of the totally energy generated on the grid is generated through the burning of fossil fuels. On the other hand, if the Maltese household in which the car is being charged happens to be powered completely and totally by photovoltaic cells, there would be little to no impact on the environment when driving the car.

There has been a large increase in the purchases of electric cars (EV) over the past few years. The main reasons for this are that they are more efficient than fuel-powered cars; they require less maintenance than most cars and reduce the dependence on fossil fuels, again assuming that the grid is powered, at least partially, by a renewable source. Electric cars are very similar to PHEVs in the sense that their impact on the environment is very much dependant on the energy

[56] Lake.
[57] Environment, Energy, Transport and Agriculture Statistics Unit.

production of the grid. In countries in which the majority, or all the energy is produced by the burning of fossil fuels, EV and PHEV still prove to be advantageous. This is due to the fact that when a country converts to cleaner and more energy efficient power plants, EVs and PHEVs also become less dependant on the burning of fossil fuels by power stations. [58]

7.3. Understanding the advantages and disadvantages of hybrid cars in terms of practicality issues

There are a number of advantages to owning a hybrid vehicle, first and foremost, they have better emissions and better fuel mileage, making them both environmentally sustainable as well as cheaper to run. Owning a hybrid car leads to many financial benefits, namely, enjoying certain subsidies which are provided when purchasing the vehicle, lower registration costs and free charging stations, which all further contribute to reducing the amount spent to run the car. Hybrid cars help to reduce the world's dependence on fossil fuels as they are much cleaner and require less fuel to run. When driving an electric car, the energy usually lost by conventional cars when breaking, is captured by hybrids in order to charge the batteries and propel the car forward when needed, further increasing efficiency. Hybrid vehicles are also advantageous in the way that they retain a higher resale value, primarily due to the spike in demand for such vehicles. In the case of supercars and sports cars, hybrid technologies have shown to increase performance greatly, and this can be proven by the fact that some of the fastest road cars in world are in fact hybrids. [59]

On the other hand there are also a number of disadvantages associated with owning a hybrid vehicle. Controversially, performance is the first disadvantage, even though it is listed above as an advantage. This is due to that fact that affordable and conventional hybrid models are usually created with the aim of achieving the best efficiency, and are not focused on optimum performance. For that reason, most hybrid cars are only equipped with a small gasoline engine for propulsion, and the electric motor is also of a very low power. Together, both engines usually produce less power than a single combustion engine car. Hybrid cars are also more expensive than their conventional counterparts due to the added cost of the electric motor and battery pack that the producer must incur. Such costs are usually reduced by subsidies. Due to the fact that hybrid cars house two engines, these cars offer less storage space when compared to conventional cars, and also have poorer road handling due to the additional weight.

In the case of damage caused to a hybrid car, the cost of repairing the vehicle would be significantly higher than that of a conventional car. This is due to the fact that there are two engines, and the individual costs of the parts are also more expensive; it may also be difficult to find mechanics with such expertise to fix the problem. Lastly, the presence of lithium-ion batteries and such high voltage gives rise to a number of safety issues, namely, the fact that

58 "Environmental Impact Of Electric Vehicles | Energysage".
59 "Advantages And Disadvantages Of Hybrid Cars - Conserve Energy Future".

electrocution from the batteries could be lethal. Furthermore, in the case of a grave accident, if the batteries are punctured, they are likely to catch fire due to their highly flammable qualities. Additionally, this could also be dangerous since if the fuel makes contact with the batteries, it might ignite and cause an explosion.

7.4. Hybrid cars in Malta

In Malta, the Government has set aside one million, eight hundred thousand euro to distribute, as an incentive, to those who choose to purchase a hybrid or electric vehicle. A great portion of these funds was set aside exclusively to subsidise the purchasing of hybrid cars, with those eligible, either business or personal, receiving a subsidy of between €800 and €2000 on each purchase. This can prove to help bridge the price difference between conventional cars and their hybrid counterparts, making them more affordable. This has proven to be quite a success in Malta with approximately 1,550 applicants receiving such funds in 2017. In Malta there is also a €500,000 scheme for fully electric cars, in which applicants would choose to scrap their car for up to €7000. Businesses have received up to €200,000 in order for them to upgrade their squadron to an electric one. The government has also set aside €100,000 towards taxis for wheelchair users; in such cases, taxi companies or chauffeurs could receive up to €10,000. These subsidies go "*hand-in-hand with the removal of registration tax on electric vehicles as well as the removed of annual license fees for five years*". [60]

[60] "Demoev Partners".

Concluding Remarks

Throughout this paper, a number of critical issues have been discussed, primarily focusing on what has been done in order to safeguard some aspects of the environment under Environmental Law. The work that has been done by the European Union has been of great importance and the amount of multilateral environmental agreements related to this topic have been numerous. One upcoming initiative by the World Academy of Science, Engineering and Technology, is the 21st International Conference on Environmental Law and Policy (ICELP) which will take place in 2019, in Rome [61]. The ICELP aims at bringing together academic scientists, leading researches and research scholars to share and exchange ideas, experiences and results on all aspects of Environmental Law and Policy.

On a local level, it can also be noted that a number of changes and initiatives have taken place in order to better the environment. However, despite this, Malta still faces many challenges, with one of the main ones being that Malta has been set a target by the EU in which it has been ordered that 10% of Malta's energy must be converted to renewable sources by 2020, something which Malta seems to be having a difficulty to achieve. Noticeably, in 2016 it was recorded that only 3.4% of energy in Malta was renewable. Sustainable development is also another area of the environment in which Malta faces certain problems. This issue has been the centre of a number of heated discussions lately due to the fact that certain permits have been passed, allowing people to develop in ODZ (Outside Development Zone) areas, such as the case of the American University in Żonqor.

Despite this, the Maltese government has taken a number of approaches to try and better the environment and to safeguard our nature. One of the major steps taken, although controversial, was the building of the new power station, allowing the old power station in Marsa to be closed down. The Government also provides subsidies for people who buy solar panels and use solar energy in order to power their homes. One of the latest initiatives adopted by the Government is that of the promotion and the encouraging of the use of hybrid and electric cars. One of the biggest advantages given to drivers of such cars is that they do not need to pay for the recharging of these cars, saving financial costs that they would have previously spent on fuel. Nowadays, although Maltese Environmental Law has not yet reached its pinnacle, it is safe to say that the traditionalist approach to the environment and Environmental Law has undergone drastic changes, especially as a result of the implementation of the EDPA. Noticeably, what seems to be the problem in Malta is actually related to enforcement issues. As seen throughout this paper, when it comes to environmental legislation in Malta, the laws have been numerous, however there seems to be a greater issue with the actual implementation and enforcement of such laws.

[61] 'ICELP Rome 2019: 21St International Conference On Environmental Law And Policy' (Waset.org, 2018) <https://waset.org/conference/2019/01/rome/ICELP> accessed 8 April 2018.

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