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FAMAGUSTA ECO-CITY PROJECT:

Towards a sustainable
development.

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TITLE

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ABSTRACT

How to transform urbanization in a more ecological or sustainable direction has long been debated and is now an ongoing problematic in modern cities (Bradley, 2009). Governments, institutions, civil society and even the private sector is increasingly considering new strategies to conduct new more sustainable ways of planning. One of the most significant efforts made towards establishing a sustainable urban development, is the eco-city model. Unlike other European countries, the issue with Cyprus goes beyond the urban planning and the rapid population growth, that is recently taking place. Having in mind that the after-war situation has left Cyprus as a divided country where ethnic conflict has been domesticated for the last 42 years, urbanization and peace building processes could be the solution to the potential reunification of both parts of the island, in terms of land and citizenship. Such ethnical and ethical reasons are causing different communities of the small island to show interest into existing settlements and the revitalization of lost cultural aspects. This study focuses on the challenges that an ongoing local project called "FAMAGUSTA ECO CITY" faces in order to resuscitate the city of Famagusta that has been abandoned after the war in 1974. The project aims to transform the representation of territories of ethnic conflict to that of territories-of-common concern employing design as a potential political tool to achieve democratic, social and economic change towards the city's commons. The urbanization process will be further investigated and problematized according to the sustainability theory, as it has been defined throughout the years and it will be compared to projects that are already in use. The methodology applied to this investigation will be to reflect on the global situation of the island according to the "Europe 2020", the European Union's growth strategy for the ten-year period 2010 - 2020, with the aim of smart, sustainable and inclusive growth, and how it has been implemented and developed ever since it has been accepted. Later on, the referred project will be taken under the scope and by combining the three pillars of sustainability and having in mind the importance of the cultural aspects, this study will establish whether, and in which ways, it would be beneficial for the island to proceed to such sustainable approach.

KEY WORDS

Sustainability; Sustainable Architecture; Sustainable development; Cultural Heritage; Eco-city;

RESUMEN

A fin de cambiar la trayectoria de la forma de urbanizar hacia una visión más ecológica y sostenible, se debatió durante mucho tiempo y ahora es una problemática constante en las ciudades modernas (Bradley, 2009). Los gobiernos, las instituciones, la sociedad civil e incluso el sector privado están considerando cada vez más estrategias para llevar a cabo nuevas formas de planificación más sostenibles. Uno de los esfuerzos más importantes realizados para establecer un desarrollo urbano sostenible es el modelo de la ciudad ecológica (eco-city). A diferencia de otros países europeos, el problema con Chipre va más allá de la planificación urbana y el rápido crecimiento de la población, que está teniendo lugar recientemente. Teniendo en cuenta que la situación posterior a la guerra ha dejado a Chipre como un país dividido donde el conflicto étnico ha sido domesticado durante los últimos 42 años, los procesos de urbanización y consolidación de la paz podrían ser la posible solución para la reunificación de ambas partes de la isla, en términos de tierra y ciudadanía. Tales razones éticas y éticas están causando que diferentes comunidades de la pequeña isla muestren interés en las urbanizaciones existentes y la revitalización de los aspectos culturales que se están perdiendo. Este estudio se centra en los desafíos que enfrenta un proyecto local en curso llamado "FAMAGUSTA ECO CITY" para resucitar la ciudad de Famagusta que fue abandonada después de la guerra en 1974. El proyecto tiene como objetivo transformar la representación de los territorios de conflicto étnico en el de territorios de interés común que emplea el diseño como una herramienta política potencial para lograr un cambio democrático, social y económico hacia los bienes comunes de la ciudad. El proceso de urbanización será investigado y problematizado más a fondo de acuerdo con la teoría de la sostenibilidad, de la manera que se ha definido a lo largo de los años y se comparará con proyectos similares que ya están construidos. La metodología aplicada a esta investigación será reflexionar sobre la situación global de la isla de acuerdo con la "Europa 2020", la estrategia de crecimiento de la Unión Europea para el período de diez años 2010-2020, con el objetivo de un crecimiento inteligente, sostenible e integrador y cómo se ha implementado y desarrollado desde que fue aceptado. Más adelante, el proyecto referido anteriormente, se estudiara en detalle y se combinara con los tres pilares de sostenibilidad, teniendo en cuenta la importancia de los aspectos culturales. Al final, este estudio establecerá si, y de qué manera, sería beneficioso para la isla proceder a tal enfoque sostenible.

PALABRAS CLAVE

Sostenibilidad; Arquitectura Sostenible; Desarrollo Sostenible; Herencia Cultural; Eco-ciudad;

Table of Contents

1. INTRODUCTION	6
1.1 BACKGROUND INFORMATION	8
1.1.1 Brief background information on Cyprus	8
1.1.2 The ongoing situation	10
1.1.3 Famagusta today	11
1.2 SUSTAINABLE ACTIONS IN CYPRUS	12
1.2.1 Actions towards economic sustainability	13
1.2.2 Actions towards environmental sustainability	14
1.2.3 Actions towards social sustainability	15
1.3 SUSTAINABILITY CONCEPTS	16
1.3.1 Main goal: Sustainable Design	20
1.3.2 A radical solution to unsustainable development. DEGROWTH	21
1.3.3 Sustainable Conservation	22
1.3.4 ECO-CITY. Sustainable attributes.	24
1.4 OBJECTIVES	27
1.5 METHODOLOGY	28
1.5.1 Steps taken	28
1.5.2 References	29
2. FAMAGUSTA PROJECT	30
2.1 <i>How the idea flourished</i>	30
2.2 <i>Aims of the Eco-City project</i>	30
2.2.1 Beneficial aspects and future challenges	31
2.2.2 Solving the dilemma of Eco-city transition or creation.	33
2.2.3 A realistic model	33
2.2.4 Actions towards sustainability	34
3. RE-ADAPTION OF EXISTING SETTLEMENTS INTO ECO-CITIES: EXAMPLES FROM THE PAST	36
3.1 <i>Freiburg, Germany</i>	37

3.2	<i>Hammarby Sjöstad</i>	39
3.3	<i>Harris centre for conservation education, Hancock NH, USA</i>	40
3.4	<i>Trinity Church, Boston, USA</i>	41
4.	COMPARISON	42
4.1	<i>Vauban in relation to the Famagusta Project</i>	42
4.2	<i>Buggi 50 in relation to the Famagusta project</i>	42
4.3	<i>Hammarby Sjöstad</i>	43
4.4	<i>Harris centre for conservation education in relation to the Famagusta project</i>	43
4.5	<i>Trinity Church in relation to the Famagusta project</i>	44
5.	DISCUSSION AND CONCLUSION	45
6.	REFERENCES	50
7.	FIGURES	54

1. INTRODUCTION

Thirty years have passed since the UN report “Our Common Future” was published. Since then, the concept of Sustainable Development has become a mandatory part of the vocabulary of politicians, administrators and planners (Brundtland & Khalid, 1987; Høyer & Naess, 2008 , p.108). Through these thirty years the term has been used and reused in that extent that some of the meaning may have been lost. After the well-known definition sentence of the report, it conveys that a sustainable development comprises a strong element of distributive ethics, focusing on the distribution of benefits and burdens over time as well as spatially. This means that every human on the globe, through generations should have the opportunity of a dignified life and have their basic needs met (Høyer & Næss, 2008, p.181). In our time this is a hard goal to achieve, because it means that privileged nations and population groups must give up their privileges.

Sustainable development could be taken further by practicing the preservation of existing buildings and the long-term survivability of them in order to be conserved and maintained for future generations to enjoy. The emerging ideology of the Eco-city mainly focuses on environmental sustainability and its primary aim is to minimize the ecological footprint (Hu, 2009). The ultimate goal of an eco-city, is to create zero carbon settlements by minimizing the use of land, energy and materials, while at the same time it attends to encourage the implementation of a new transportation hierarchy and a cyclical urban metabolism, based on the re-use of materials, waste and water (White, 2002; Frey, 2011; Wong, 2011).

Cyprus, after agreeing to the Kyoto Protocol and the European Committee, has been dedicated to take actions that will improve the current situation that our planet is facing at the moment and to ensure a balanced approach towards human expectations and long-term environmental needs. The need to protect our environment and our future chances for surviving on this planet, and not just our history and culture, is constantly rising and the available natural resources are dwindling and our planet is getting destroyed by climate change, pollution of all kinds.

Famagusta, the “ghost city” of Cyprus, is at the intersection point of many borders and buffer zones, therefore it suffers deeply from fragmentation of the terrain and use diversification. The Famagusta Eco-City project carried out by the native Cypriot Vasia Markides and her team of a wide range of backgrounds, is aiming to prove through this project that sustainability is a unifier for divided communities and it can attack all three pillars of Sustainable design at the same time. Bringing people together around issues of common concern can actually unite them. The question raised here would be, could sustainability and the eco-friendly concepts help in order to create a peaceful integrated city?

The main objective of this study is to find out if the attempt to revive the splendour—with a sustainable twist is not only just another utopia. Even if it is difficult to take a city that's already in existence and form it into a green city, this study will explore what has been done in other cities in the past and recompile some of the basic ideas. As sustainability is ambiguous and highly disputed, in terms of meaning and what it entails, it should be explored in the light of different theories and reports.

This paper has been divided into five sections. "Background" provides some history information on Cyprus, in order to understand what the area of Famagusta as well as the ex-inhabitants have gone through and also make it possible for the reader to keep up with the current situation. "Sustainable concepts" section provides a further understanding of the term sustainability which is used as a backdrop through the text. "Famagusta project" explains the aims and vision of the project, which is analyzed according to the sustainability concept. "Examples from the past" show an understanding of the Eco-city concept, through past examples that have been carried out, showing both beneficial and controversial factors. Also, this section provides information on two public buildings and enlightens the idea of re-use in terms of sustainable design. Finally, the section "Discussion" brings all the ideas into the scope, and all of the ideas are reconsidered and "Conclusion" section offers a concluding remark on whether an eco-city could become a real example.

1.1 BACKGROUND INFORMATION

1.1.1 Brief background information on Cyprus

Cyprus is the third largest island in the Mediterranean sea, after the Italian islands of Sicily and Sardinia, and it is found in Northeast edge of the Eastern Mediterranean. The island is located at the helm of Eurasia with Africa, as well as in the lane of the great sea road linking the Mediterranean Sea with two sea gates, Suez and Bab el Medet with the Indian Ocean. From there, it is linked to two other gates of the sea, the Straits of Hormuz leading to the Persian Gulf and the Pacific Malawi Straits. Due to its geostrategic position, throughout its history, the external forces have tried to showcase their influence on the island (Georgios A. Kostopoulos, 2017).

Over the centuries, its geographical position has had a controversial effect on it, as at times it was beneficial and at others it was disastrous. The positive effects where that it was brought into direct contact with the first major centres of civilization. And disastrous as it was the cause of all those conquerors who tried to invade the island, many times over the years, being some of them the Assyrians, the Crusaders, the Turks and many others.

All the ingredients of violence can be found in the last 50 years of the Cypriot history. The Britannic occupancy ended in 1959, after the settlement between Britain and Cyprus where they agreed to leave the island keeping two areas as military bases, as they wanted to keep the beneficial position between Asia and Europe. On August 16th 1960, Cyprus was declared Independent and the Republic of Cyprus was born, after the Greek Cypriot underground group EOKA waged a five-year guerrilla war against Britain.

In 1963, Turkey assisted Turkish Cypriots to break up the agreements and undermined Cypriot democracy and the Turkish Cypriot minority withdrew into enclaves. The beginning of the most crucial historical era for the island, which is characterized as the most important date in the fifty-year history of the Republic of Cyprus was marked in 1974. This critical period lasted for over a decade when the country finally regained the lost economic and political power that it lost in the war. At the time, the church played a very important role in the development and the empowerment of the island's economy

Fig.1

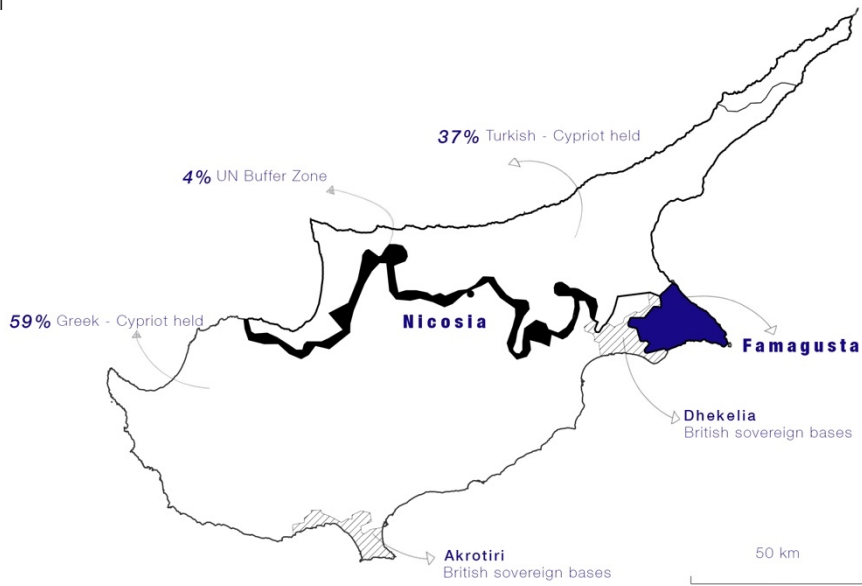


FIG. 1:
Summarized
plan of territory
arrangement in
Cyprus. Own
production.

and politics, and the Archbishop Makarios elected as the president of Cyprus. On the other hand, the military regime of the Athenians, many times throughout the years undermined and challenged the government mentioned above, having its peak on July 15th 1974, the dictatorship in Greece staged a coup to annex Cyprus to Greece (Phileleftheros, 2011).

Turkey, finding the opportunity it had long awaited after the junta coup, invaded Cyprus with the pretext of restoring the constitutional order. Due to the coup, the defence of Cyprus was completely disorganized and the Turkish army was able, without much difficulty, to land on the coast of Kyrenia, July 20, 1974. Within a few days, the Turks occupied a significant part of the province of Kyrenia. They thus showed the real character of their attack as an invasion and occupation of Cyprus. Although the constitutional order was soon restored, as a result of the events of the invasion, the junta lost power in Greece and Cyprus and the coup left.

The Turkish military reiterated the attack on August 14, 1974 and ceased only after completing the occupation of 37% of the territory of Cyprus. Apart from the Kyrenia province, they occupy the Xeros - Morphou area, most of the Famagusta province and a small part of the Larnaca province.

As a result of the war and the occupation, 200,000 Greek Cypriots fled to the free areas of the island. More than 4,000 Cypriots were dead, around 2,000 missing persons and 17,000 enclaved, mainly in the region of Karpasia. The losses were enormous and the Cypriot people sank into indescribable pain and disaster. Greek Cypriots living in the north were forcibly displaced to the south, while Turkish Cypriots in the south were moved to the north. The Turkish Cypriot leader Rauf Denktash later unilaterally declared the north to be The Turkish Republic of Northern Cyprus, which remains recognized only by Turkey.

To this day, the Turkish troops have not left, and the island remains divided. During the conflict of 1974, a six square kilometre district of Famagusta known as Famagusta, was fenced off from the rest of the island by barbed wire. Famagusta itself is the setting for Shakespeare's Othello and is one of the island's most important harbours, tourist destinations, and centre of culture, trade and commerce (Apostolou, 2006).

1.1.2 The ongoing situation

The Cyprus issue has deep historical roots and various subtle, internal and external aspects. However, since the illegal Turkish invasion (July-August 1974) and the occupation of about 37% of the territory of the Republic of Cyprus since then, (Philelefttheros, 2011) it is primarily about an international issue of invasion and occupation of a direct violation of the Charter of the United Nations and a multitude of Decisions the United Nations.

42 years ago, Turkey refuses to withdraw its illegal military occupation forces from Cyprus, which have made Cyprus the most militarized region in the world. The Cyprus issue is also a typical case of a continuous, blatant and massive violation of basic human rights and freedoms by Turkey. In particular, Turkey violates the rights of Greek Cypriot refugees, their missing persons and their relatives, as well as those trapped in the occupied part of the island, while systematically continuing the illegal settlement and destruction of the cultural heritage in the occupied areas of Cyprus.

The international community has repeatedly expressed its views on the Cyprus problem, condemning the invasion and demanding the withdrawal of the occupying forces through a long series of Resolutions and Resolutions in international fora, such as the UN General Assembly and the UN Security Council, the European Parliament, The Council of Europe, the Group of Non-Aligned Members and the Commonwealth Group.

In November 1983, the Turkish side unilaterally proclaimed the pseudo-state's independence in the occupied part of Cyprus. By Decisions 541/1983 and 550/1984, the Security Council condemned this unilateral unlawful act by requesting its withdrawal and inviting all States not to recognize it or to assist it in any way.

UN resolutions call on the two communities to find an agreed solution to Cyprus' internal political problem through negotiations, respecting the sovereignty, independence and territorial integrity of the Republic of Cyprus, the rapid withdrawal of foreign troops, the termination of any foreign intervention in the its assumptions and urgent measures to return all refugees to their homes.

The decisions of the United Nations also identify the basis of an agreed solution which, in addition, given the status of Cyprus as a member state of the European Union, should be fully compatible with the EU's institutional and legal framework and ensures the continuity of Cyprus' effective participation in the European Union's decision-making processes.

Continuous cooperation and coordination between Greece and Cyprus are a decisive factor in finding a comprehensive, mutually acceptable, just and viable solution to the Cyprus problem (Hellenic Republic, Ministry of Foreign Affairs, 2018).

1.1.3 Famagusta today

Famagusta is at the intersection point of many borders and buffer zones, therefore it suffers deeply from fragmentation of the terrain and use diversification. The issues mentioned have been caused mainly from the isolated urban settlements on each side of the border line, which conducted to a fenced off uninhabited area in the city, now known as a “ghost city”. Other areas that contributed to the fragmentation of the city are the port area, the medieval old town surrounded by Venetian fortifications, the fenced military areas extending along the coastline, industrial zones, a university campus and the ecological sites. On the surroundings, the city is inhabited by Turkish-Cypriots who were either originally there before the Greek-Cypriot community left or who were displaced from other parts of the island and also Turkish migrants from mainland Turkey who live in their own separate neighbourhoods.



FIG. 2: State of abandoned buildings in Famagusta. Photograph by (O'Toole, 2016)

Without doubt, like the rest of the island, Famagusta region has a long list of invaders and historical monuments that mark the culture and identification of the island.



FIG. 3: State of abandoned buildings in Famagusta.
Photograph by (Rhinocarhire, 2009)

To this day, Famagusta remains surrounded by barbed wire, and it is far to what it once was, attracting people from all over the world to visit its beauty and great lifestyle. Now what one encounters when they come across it is a place of captivity, an abandoned and deserted area, a point of political struggle, inaccessible and well-guarded by the Turkish military. Furthermore, the area is completely inaccessible and highly guarded by the Turkish army. The only way to get a

glimpse of the state that Famagusta is in today, is by the few viewpoints that have developed in the border line between the two lines.

1.2 SUSTAINABLE ACTIONS IN CYPRUS

Cyprus after committing to be an active member of the European Union, is dedicated to take actions that will improve the current situation that our planet is facing at the moment and to ensure a balanced approach towards human expectations and long-term environmental needs. Ecological interdependence, equality between generations, equal but differentiated responsibilities are some of the principles that are followed by several international, EU and national policies in order to reach the sustainable targets that are set.

The island is willing to change the traditional ways of dealing with the environment and therefore ensure a balance between **environmental**, **social** and **economic** targets, and to create synergies with other policies in place, such as the Lisbon Strategy, the Cardiff Process and other specific thematic strategies.

Information on Cyprus' low-carbon development strategy and its implementation was submitted to the Commission on 16 March 2015. As of that moment, it has been established that a sustainable development is a clear goal in the general plan of the island (Department of Environment Ministry of

Agriculture, Rural Development and Environment, 2016; The Cyprus Institute, 2010). Due to the fact that Cyprus is an island country, it is impacted by higher costs and emissions from energy as it imports oil for electricity generation. A significant interest has been shown in developing domestic energy sources such as offshore natural gas as well as improving the interconnections with other energy grids, having as a long term plan to link Cyprus with both Greece and Israel. At the moment, Cyprus is gradually implementing a number of modest measures to encourage energy efficiency improvements (Lena Donat, 2013).

Furthermore, the unreasonable amounts of energy consumption that are continuously rising, have finally been targeted for a radical decrease, as the discussion towards a sustainable building design and energy savings is on the table and the first steps have already been implemented. Nevertheless, the plan for construction in Cyprus is still considered to be unsustainable. By introducing and describing the aspects of sustainable design and historic preservation, it will show opportunities of mutual development of the abandoned or unused buildings of Cyprus in a way that the local economy, as well as the social situation and the environmental issues would be benefitted from (Department of Environment Ministry of Agriculture, Rural Development and Environment, 2016; The Cyprus Institute, 2010). To ensure the success of this strategy, it is necessary to involve the public and the society as a whole and to progress at a national level with the implementation of national strategies for sustainable development.

1.2.1 Actions towards economic sustainability

The European Commission's country Report on Cyprus published in February 2017, identifies several challenges that have to be reflected on by systematic records on the progress and ongoing work based on the National Reform Program (NRP). Furthermore, the NRP outlines planned actions in order to address the economy's key policy challenges. Some of the sectors of Recommendations are: (a) Public Finances and Fiscal Governance; Public Administration and Local Government Reforms, (b) Insolvency and Foreclosure Frameworks, Title Deeds and Court System Reforms, (c) Private Indebtedness, (d) Investment, Action Plan for Growth, Privatisation, Regulation and Access to Finance, (d) Public Employment Services and outreach to the non-registered unemployed; Health Care Reform.

The robust economic growth in the last three years, caused mainly by a large tourist wave that marked an increase of 20% in 2016, as well as private consumption marked from net exports and investment, has allowed Cyprus to access international capital markets with improved borrowing conditions.

The unemployment rate has shown a decent decrease by 2,7% in 2016, which gives hope to the labour market. On the other hand, inflation rate has been negative for a third consecutive year reflecting the significant decrease of international oil prices. The future for Cyprus is very positive. If the framework marked is followed and the challenges are met year by year, the island will be possible to overcome any difficulties and meet the European standards.

A strategic goal scheme has been formulated in order to serve the goals and priorities found in the operational programme of “Sustainable Development and Competitiveness” for 2010. In this there are steps to achieve the Improvements of Competitiveness of the Economy under conditions of Sustainable Development. There are three sectors that would be followed. First, there would be in order to make the country more welcoming through the development and upgrading of basic infrastructures, including the infrastructures in the field of environment and energy and in the field of transportation. Second step would be to promote information for the society in order to enhance the innovation and improvement of the production environment. And lastly, there would be a development of viable communities in urban and rural areas, including the revitalization of such areas and product environment.

1.2.2 Actions towards environmental sustainability

In Cyprus, the Department of Environment under the Ministry of Agriculture, Rural Development and Environment is the national entity entrusted with the overall responsibility for policy evaluation and for providing projections of anthropogenic greenhouse gas emissions.

One of the most prejudicial factors regarding the low indicators on sustainable measures, is the energy consumption, including the increasing use of non-renewable energy, the unreasonable use of vehicles as first mean of transportation and the energy used in agriculture and waste. Currently, the main focus of the policy related to reduction of greenhouse gas emissions is energy, which has marked a total of GHG emissions of 69% in 2013, whereas it showed an increase of 45% compared to the levels recorded in 1990.

Although, the emissions recorded in 2013 decreased by 16% compared to 2012. Energy is the sector which has to contribute the most in the reduction of greenhouse gases of Cyprus, thus is the sector which most measures are implemented to. For achieving the desirable results according to the timeline marked for 2020, measures like the import of natural gas, and its initial use for electricity production, will be carried out.

The share of renewable energy in gross final energy consumption for Cyprus is 13% and the share of energy from renewable sources in all forms of transport (vehicles, trains, metro) in 2020 should represent at least 10% of the final consumption of energy in transport. In order to reach the target for electricity, heating and cooling, and transport, the island has set a plan of the shares that should be met in each sector.

The construction sector is primarily affected by the “energy efficiency and savings” sector, where according to the European commission the measures that have to be taken for attainment in residential and tertiary buildings, are:

- Minimum energy performance requirements for new buildings, existing buildings that undergo major renovation and building elements that are substituted or retrofitted
- Energy Performance Certificates for new buildings and for buildings that are for sale or rent
- Promotion of Nearly Zero Energy Buildings (NZEB)
- incentives for renovating existing houses to save 40% energy or to reach energy class B or to reach NZEB levels
- Regular inspection of heating systems with boiler and large air conditioning systems
- Restricted insulation that covers the energy demands in residential sector

1.2.3 Actions towards social sustainability

According to the Kyoto protocol, which is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets, social sustainability will be targeted through education and public participation.

For any type of sustainability to be successful, the measures to adopt in order to combat human-induced climate change and fulfil its obligations, general awareness must be spread all over the island

and the general public should be willing to participate in achieving the set targets. The government must work with industry and non-governmental organisations in order to mobilise the public so that the goals can be achieved.

1.3 SUSTAINABILITY CONCEPTS

Since the publication of the UN report “Our Common Future” in 1987, the issue of sustainable development has been an international challenge. The widely known Brundtland report defines it as:

“a development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (Brundtland & Khalid, 1987).

At the time, there was a common agenda, that showed a great concern on the economic development in developed countries, as it produced environmental instability and thus was putting in danger the well-being of the societies. According to the UN report, the most threatened cities are the ones that share a social conflict, environmental degradation and collapse of basic services, and the only antidote is the **“urban sustainable development”** defined as the result of the actions that guide the evolutionary process of **“urban environmental sustainability”** combined with the need for **“urban development”** (Basiago, 1998; Ravetz, 2000).

The concept of sustainability grew from an environmental background, but have expanded to include other issues and perspectives (economic and social). On the other hand, **“sustainable development”** was derived from an economic discipline questioning the short resource supply and the long term effect on natural resources, questioning if the exponential population and material growth combined with the linear growth shown in technology and subsistence would be catastrophic for the society (Basiago, 1998).

Today it is often stated that a sustainable development rests on three pillars: economic, social and environmental sustainability. The three spheres of sustainability, much like Vitruvius’ Principles, must be solved simultaneously and provide them with care and value (Williams, 2007).

To define these pillars, Andrew Basiago’s text “Economic, social, and environmental sustainability in development theory and urban planning practice” has been used.

“Economic sustainability implies a system of production that satisfies present consumption levels without compromising future needs. The ‘sustainability’ that ‘economic sustainability’ seeks is the ‘sustainability’ of the economic system itself” (Basiago, 1999, s. 150).

In other words, **economic** sustainability seeks to enhance the long term resilience, create competitive systems, prevent unemployment and support the equity in resource distribution.

The **social** dimension of a sustainable development encompasses notions of equity, empowerment, accessibility, participation, sharing, cultural identity, and institutional stability. It seeks to preserve the environment through economic growth and the alleviation of poverty. (Basiago, 1999, s. 149). It is about the inhabitants of the city, their living conditions and equality.

The **environmental** pillar of a sustainable development is maybe the most generally known today. It strives to preserve biodiversity and natural resources from overconsumption and reduce CO² emissions to prevent global warming. (Tittle, 2011).

Each of these functions, is interrelated to one other as environmental protection is essential for all human life, economic development is needed for environmental protection and social progress is

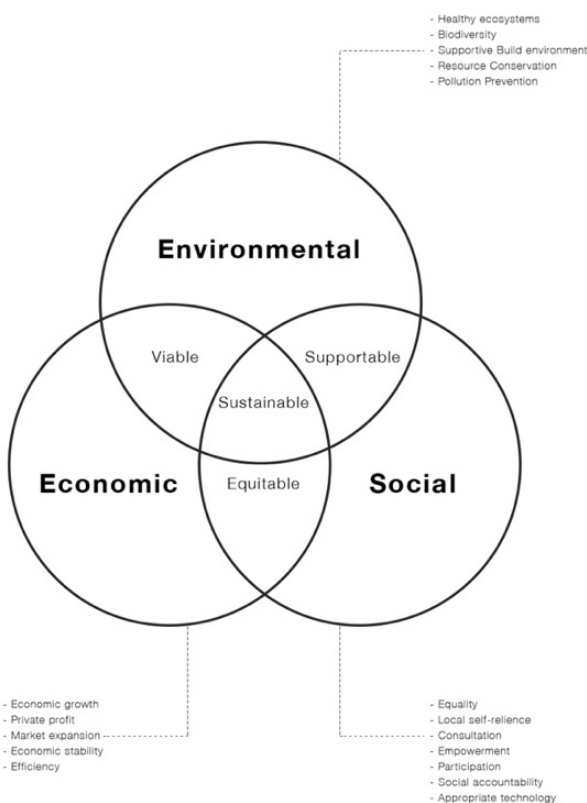


FIG.4: Weak Sustainability. Three circles of sustainability. Own production.

needed for stable economy. Sustainability can be evaluated according to two different concepts named as “soft sustainability” and “strong sustainability” and even though the two terms are related subjects, as they both take into consideration the relationship between the three pillars, they are indeed different concepts (Sustainable Transportation Indicators, 2007; Marsden, 2007; Solow, 1992).

The “weak” or soft sustainability model emerges from the three overlapping-circles model of sustainability. It considers that the three dimensions of sustainability, economic development, social development, and environmental protection, are interrelated with one another, as illustrated in Fig.4.

At the same time, each dimension can exist on its own, having its individual objectives and score to settle: the economy is mainly focused in increasing the wellbeing of human beings, primarily through obtaining the equilibrium in the offer and demand of goods and services; the environmental protection focuses on the integrity and resilience of ecological systems; and the social development emphasizes in the increase of human relationships and achievement of individual and group aspirations.

An alternative model, known as “strong” sustainability, has emerged as a more-promising approach (Fig. 5). “Strong sustainability” puts the emphasis on ecological scale over economic efficiency. As defined in terms of constant environmental quality, it recognizes that the human society and the economic activity within it are totally constrained by the natural systems of our planet. This implies that nature has a right to exist and that it has been borrowed and should be passed on from one generation to the next still intact in its original form (Wikipedia contributors, 2018). New economic indicators of well-being and quality of life are advocated (over more simplistic standards of living) and market-based solutions that impose monetary values on life and “ecosystem services” are rejected on moral grounds. In this case the model fails to address the conflict between social, economic, and environmental sustainability. Thus, an integrated approach is necessary to overcome the gap between the schools of weak and strong sustainability (Florianna L. Michael, 2014). Through a good correlation between the two, a sustainable development will be obtained.

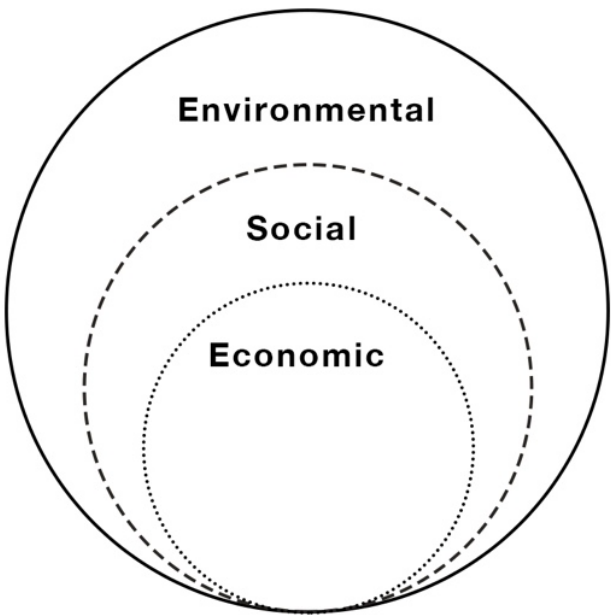


FIG.5: Strong Sustainability. Three circles of sustainability. Own production.

The essential interaction between the triangle of environmental - social - economical sustainability, bring together the resource management concepts of stocks, patterns, flows and limits, with an additional scope of the dynamics that withhold the potential of human activity to turn problems into opportunities. In this case the three pillars will be subdivided into three mixed groups forming: “Economic-Environmental”, “Socio-Environmental” and “Socio-Economical” sustainability. Furthermore, another concept that will help carry out this paper will be the Socio-Cultural Sustainability, as it combines a perception of the well-being of human life in

terms of space and the quality of the materiality of the architecture we live in. These concepts also define the starting point of “urban sustainable development”.

“Economic-Environmental”: As economic activity was the leading factor of natural resource insufficiency, a balance towards a sustainable economy has to consider the environmental impact resulting from population growth, affluence and technology, which can be protected within economic markets and social systems. Then by considering the “dynamic” values, which could be innovation, skills, competitiveness and optimism, it would be possible to reduce the ecological impact while expanding the economy by transforming consumption and production.

“Socio-Environmental”: The affluence in this case could be reached by finding a balance between human needs, cultural factors and non-material needs, leading to an environmental sustainability. Then on the other hand, the dynamics enable the cohesion and integrity of individuals, families, groups – community – which empowers the system and produces diversity, identity and values towards sustainability.

“Socio-Economical”: In order to link all three points together, there needs to be a cooperation between social interaction, public services and fulfilling activity. In other words, in order to achieve a sustainable development, societies need to local communities to be more self-sufficient, by sustaining local production, by optimising local materials and by choosing to work with communal efforts. Furthermore, the overall idea of the lifecycle of the building and the materials used could be thought in a different way, considering the maintenance, conservation and adaptability that could be reached through balanced efforts, enhancing the local economy and reducing production costs and waste in the long run.

“Socio-Cultural”: This point could be directly related to vernacular architecture as the increasing mobility of our everyday life provides us with inevitable contact with different cultures and heritages. The link we have with such places, provides an emotional connection, as they supply a feeling of closure towards “our” past. The beneficiary factor, is that movement that was first seen from rural to urban areas, is now being reconsidered and more people want to go back to their roots and enjoy a more calm environment. Cultural heritage then creates opportunity to re-adapt the future architecture to a more meaningful one and create spaces that both enhance the social interaction as well as the need to maintain our cultural background and identity.



FIG.6: Illustration of sustainable city. Own Production

Nature has come to be identified with pictorial conventions of the picturesque (Howett 1988), which best describes a cultural concept rather than an ecological one. In order to approach the ecological design, one must first understand the interrelationships between environmental processes and human needs. Whereas the difference between the scientific concept of ecology and the cultural concept of nature is often characterized as a design problem (Nassauer,161).

The rising ecological awareness and environmental interest, in addition to the ongoing distraction of rural settlements due to urban growth, the growth of tourism and the urge to maintain a unique identity of the regions, are some of the factors that led to the reappearance of professions, like landscape architecture, that interact with the nature in a more sensitive way, keeping in mind the cultural interests. Certainly, architecture schools have embraced landscape in recent years with a deeper interest in conceptual scope. With its capacity to theorize sites, territories, ecosystems, networks, and infrastructures, and to organize large urban fields, and relate to the real complexity of the cities, offering alternative designs that in terms of forms and contextualization are much more flexible and organic. (Corner, p. 23).

Today approximately 54 per cent of the world's population live in urban areas and by 2050 this will increase to 66 per cent (United Nations, 2015, p. 1). Even though the world's cities only occupy approximately 3 per cent of the Earth's land today, they account for 60-80 per cent of the energy consumption and 75 per cent of the CO₂ emission. Development of sustainable cities is an important goal in order to achieve an overall sustainable development.

In Cyprus, achieving an environmental sustainable development is an important national goal, as of 1998, when it adopted the Kyoto protocol, and is now taking steps to fulfil its international obligations according to the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the

legal framework of the European Union. (The Republic of Cyprus, Ministry of Agriculture, Natural Resources and Environment, 2014; Georgios Maroulis, 2014)

Concerns regarding the shortage of energy, rising demands, and the effect of irrational use have made the topic of energy savings and sustainable design almost ubiquitous. Sustainable design and historic preservation offer opportunities of mutual development: reusing materials, rediscovering and capitalizing on buildings' sustainable attributes, and inserting new efficient systems into it. The Cyprus Institute undertook an energy study and design interventions to the Cyprus Presidential Palace with the objective to develop solutions to retrofit the historically and politically important building towards Net-Zero-Energy-Buildings (ZEB), i.e., a building that applies intensive energy-conservation measures and uses its own renewable energy-generating sources to produce, over a certain period of time, the same power it consumes.

1.3.2 A radical solution to unsustainable development. DEGROWTH

According to one of the most idealistic movements in the sustainability discourse, the only way to obtain and secure a sustainable development is a reduction or limitation of material consumption, and redistribution of goods and resources, in a way that results in an equal distribution of goods, between the different social layers.

Degrowth is known as:

“an equitable downscaling of production and consumption that increases human well-being and enhances the ecological conditions at the local and global level, in the short and long term” (Xue J. , 2014).

The degrowth principles do not only challenge the way we are used to consume and use, but also how we look at the world. A new way of looking at the resources around us is a paramount for achieving the sustainable development goals.

The tradition of growth in the economic system must be altered, and a redistribution of wealth must be in place to reach the goals degrowth sets (Xue J. W., 2016) In this sense, the degrowth idea touches both practical and ethical problems that need to be solved. Degrowth is argued to be the only possibility

to reach the necessary goals of sustainable development because it alters the way we look at the world and how we treat it. The way it is challenging the established manner of consuming, redistributing wealth, reducing energy and seeking a deeper democracy generates a sustainability that is not only environmental, but also social and concerned with people's well-being (Demaria, 2012)

1.3.3 Sustainable Conservation

Recently, the interaction between different professions has led to the appropriate solution giving to issues addressed to the environmental awareness and integrity of the landscapes. Having a look back in history, we are aware that architecture has been sustainable from the beginning and that since its very origin it has satisfied many of the needs that today are no longer met. Much can be taught from looking back to the past, and studying in detail architectural buildings, the materials used, the construction techniques used, the structure and thinking behind each element.

At this point of history, taking a look back on vernacular architecture, it could be that stepping stone that will reveal new ways of constructing in a more sustainable way, without having to address it necessarily as “sustainable” but rather as a type of architecture that is contextualized to a particular regional or geographical area. Learning from the past, could embrace us to rethink the use (or reuse) of materials and the re-adaption of specific techniques that are no longer in use, in order to integrate with the idea and concept of contemporary architecture. (Mariana Correia, Letizia Dipasquale, Saverio Mecca, 2014).

By the same token, sustainable development could be taken further by practicing the preservation of existing buildings and the long-term survivability of them in order to be conserved and maintained for future generations to enjoy. Nowadays, people tend to forget that not everything is replaceable and disposable, in fact, the bigger sources of energy are renewable, and in the world of materiality that we live in, everything – or almost everything- could be fixed, instead of replaced, to be able to serve a function and saying “a” function actually refers to the ability of objects to change their function once they are re-cycled.

In the same way, buildings that are in bad shape, once they are “re-cycled” they could serve a purpose even if it’s not their original one. For example, many old industrial buildings are now used in a very different way to serve other purposes than what they were designed to, such as markets, shopping malls, schools etc. That is also the case for the Buggi 50 in Freiburg Germany, which underwent a green retrofit transformation to be able to adapt to the standards of a passive house (Julia Affolderbach, 2018). This case will be further investigated in the section 3.1, along with other projects carried out in Freiburg, Germany and the USA.

A new understanding is beginning to take hold: Reuse is environmentally superior to recycling. Having in mind that even though building materials of demolished buildings could be re-cycled, little is done with them. So why demolish a building in the first place, when it could just be changed into something else (Carroon, 2010). Even in a larger scale, old settlements and traditional communities that were built before the abusive use of the car, could be taken into consideration, as in many countries there are future visions for the massive reduction of car use and therefore the CO2 emissions. Furthermore, such areas, are generally constructed with more care and attention towards the surrounding natural elements, where coexists a harmony between the manmade and the natural environment.

Saying that, the amount of non-sustainable traditional buildings that exist, in terms of poor energy efficiency should also be considered. In this case, the rehabilitation of such buildings should achieve in first place the feeling of comfort and cosiness for the users, and in second place, take in consideration the existing features that would be of use. For example, take in advantage the environmental conditions of the location by finding new sources of energy, for example solar energy, natural ventilation and reduce non-renewable energy consumption.

As it is of grand importance in construction, all three pillars of sustainability have to be taken into consideration in order to achieve a truly sustainable development. Being then necessary to take into account the social and economic dimensions. The social dimension is met by introducing the incorporation of vernacular materials in the construction as it meets several factors of that aspect, such as employment, health, safety, well-being, education, training skills and culture/heritage.

The economical dimension, when analysed by Fernandes and Mateus (2013), concluded for the conservation of existing buildings to be more beneficial than the construction of new ones (Jorge Emanuel Pereira Fernandes, 2013).

Also, further studies carried out by the VerSus Project, that completed a comparative analysis taking into consideration costs for excavations, structure, roof, masonry, coatings, pavement, door/windows, have also demonstrated that the conservation cost of an existing building did not exceed the cost of erecting a new structure, but on the other hand more local handcrafts are needed.

In this way, the original landscape and identity of the vernacular built heritage will remain intact and will not be substituted by new houses, that threaten to reduce its value (Mariana Correia, Letizia Dipasquale, Saverio Mecca, 2014).

1.3.4 ECO-CITY. Sustainable attributes.

The continuous problematic about uncontrolled growth, privatization of public goods, lack of regulations and institutions as well as forms of collective indolence and other challenges in growing big cities and their surrounding regions are some of the problems that raise questions as to whether they are sustainable or not. Therefore, whilst some researchers often characterize such mega-cities as “unsustainable”, others argue that big cities are advantageous, especially in the developing world due to efficiencies such as labour specialization, management capabilities and infrastructure efficiencies that are conducive to positive development. After all cities are needed to fulfil human basic needs for nutrition and hygiene (UN-HABITAT; Hald, 2009; Lindgren, 2016)

As Hald (2009, p. 63) states in her thesis paper:

“It is not cities that are unsustainable, rather the lifestyles that might be associated with them such as air-conditioned home and offices, high per capita car-use in low density areas, etc. Cities are not the problem in terms of sustainability; it is the kinds of cities developed that are the problem.”

One of the most significant efforts made towards sustainable urban development is eco-city, an ecologically healthy city designed to minimize ecological footprint (Hu, 2009). The goal of the eco-city, is to create zero carbon settlements by minimizing the use of land, energy and materials, while at the same time it tries to encourage the implementation of a new transportation hierarchy and a cyclical urban metabolism, based on the re-use of materials, waste and water (White, 2002; Frey, Freiburg Green City, 2011; Wong, 2011).

Although the definition of an eco-city is very broad, and many researchers have given their own definitions throughout the years, some principles are repeated in the discussions of different articles. Such principles in proposed solutions for eco- cities include: (a) to revise land-use priorities around public transportation facilities; (b) to revise transportation priorities to discourage driving and to emphasize “access by proximity”; (c) support local agriculture, urban greening, and community gardening; (d) promote recycling and resource conservation while reducing pollution and hazardous wastes; (e) support ecologically sound economic activity while discouraging pollution, waste, and the use and production of hazardous materials; (f) promote simple lifestyles and discourage excessive consumption of material goods; (g) increase public awareness of the local environment and bioregion through educational and outreach activities; (h) enhance biodiversity (Wong, 2011; White, 2002; Hald, 2009; Hu, 2009)

“Eco” (ecological) often references the ambitious environmental goals of a planning project (particularly in terms of energy, water, waste and materials), and “city” refers to an agglomeration of districts or neighbourhoods in a large scale that serve to create liveable areas that goes beyond the construction of blocks and buildings. Cities that allow the integration of planning measures among multiple aspects of the built environment including residential areas, infrastructure, water and waste management and comprise compact, pedestrian-oriented, mixed-use neighbourhoods that give priority to re-use of land and public transport. An eco-city by its very appellation is place-specific, and serves as a new planning paradigm that aims to bring together different societal aspects of urban development into a consensual political strategy. It suggests an ecological approach to urban design, management and towards a new way of lifestyle (Wong, 2011; Mössner, 2016; Weber, 2015)

“Eco-cities”, would characteristically comprise open, pedestrian- oriented, mixed-use neighbourhoods that give priority to re-use of land and public transport (Tai-Chee Wong, 2011; Mössner, 2016). With this in mind, eco-cities are fixed spaces where urban development projects are carried out to meet three core goals:

1. To act as basic urban developments that are added to the existing building areas, meeting the need for housing, business space and social interaction.
 2. To include environmental goals going beyond current legal mandates.
 3. To test and promote a wide array of eco-innovation: particularly in terms of building and infrastructure, engineering and design, as well as new business models and planning processes.
-

Many eco-cities (as well as eco-communities, eco-villages and eco-towns) have been materializing in different parts of the world. Some are small projects, like the ones mostly seen in the European countries, while others, in the majority, Chinese, are grand in scale.

Creating an eco-city is to build a human habitat towards a sustainable society. However, it is not merely about protecting and enhancing the physical environment. One must look beyond the environmental challenge to include social and economic aspects of sustainability (White, 2002, p. 202; Register, 1987). Many of the factors and principles that define eco-cities could either be categorized as an advantage or a disadvantage, and in some cases, it could be both, depending on the point of view. A fair example is the great focus that it puts on the quality of life. Further up, eco-city is said to create liveable environments, but this really depends on the perception. Every person that is willing to benefit from the quality of life it offers, has to also be committed to a life-changing procedure, that includes social awareness and attendance. It surely improves the energy efficiency and it lowers the demand for heating and cooling, which leads to less money spent on electric energy and more time spent in a comfortable zone, so that is an example of why it might offer both negative and positive effects.

1.4 OBJECTIVES

The main objective of this study is to find out if the attempt to revive the splendour-with a sustainable twist is not only just another utopia. Even if it is difficult to take a city that's already in existence and form it into a green city, this study will explore what has been done in other cities in the past and recompile some of the basic ideas. As sustainability is ambiguous and highly disputed, in terms of meaning and what it entails, it should be explored in the light of different theories and reports.

This study follows a two way strategy in order to reveal the importance of sustainable awareness and more specifically sustainable conservation in the construction of the world we live in today. There are two main subjects of interest that are firstly discussed 1. Sustainability aspect, 2. The issue of the island of Cyprus, and are then combined into one concluding to the Famagusta project.

On one hand the study focuses on the bigger image and global understanding of sustainable design and then it narrows down to the most specific analysis and understanding of the terminology used in the paper, making clear what the words "Sustainable development", "Sustainable rehabilitation / conservation", "Degrowth" and "Eco-city" refer to.

And on the other hand, explain the problematic situation that the island of Cyprus is undergoing, through some brief background information on the history of the country and then stating the ongoing situation. Then the project of "Famagusta Eco-City" is brought under the scope and is explained thoroughly and therefore some of the problems it faces in order to resuscitate the city of Famagusta that has been abandoned after the war in 1974 are stated. The project aims to transform the representation of territories of ethnic conflict to that of territories-of-common concern employing design as a potential political tool to achieve democratic, social and economic change towards the city's commons. The urbanization process will be further investigated and problematized according to the sustainability theory, having in mind the three pillars of sustainability of environmental, economic and social interest.

The methodology applied to this investigation will finally be to reflect on the global situation of the island according to the "Europe 2020", the European Union's growth strategy for the ten-year period 2010 - 2020, with the aim of smart, sustainable and inclusive growth, and how it has been implemented and developed ever since it has been accepted.

Later on, the referred project will be taken under the scope and by combining the three pillars of sustainability and having in mind the importance of the cultural aspects, this study will establish whether, and in which ways, it would be beneficial for the island to proceed to such sustainable approach.

In order for the comparative part to be more coherent, two more projects will be analysed, which have been selected according to the similar aspects they share with the Famagusta project. First, the Buggi 50 project in Freiburg Germany, the 40-year-old building that was transformed into the world's first retrofitted high-rise building that meets all the strict measures of the passive house requirements (Julia Affolderbach, 2018). Secondly, the Vauban project that shows important involvement and collaboration from the community, strengthening in that way the social parameter of sustainable design. Then two more projects of small scale are analysed concentrating the interest in existing rehabilitated buildings, being the "Harris centre of conservation and design" and the "Trinity Church of Boston".

1.5 METHODOLOGY

The methodology applied to this investigation will be to reflect on the global situation of the island according to the "Europe 2020", the European Union's growth strategy for the ten-year period 2010 - 2020, with the aim of smart, sustainable and inclusive growth, and how it has been implemented and developed ever since it has been accepted. Later on, the referred project will be taken under the scope and by combining the three pillars of sustainability and having in mind the importance of the cultural aspects, this study will establish whether, and in which ways, it would be beneficial for the island to proceed to such sustainable approach.

1.5.1 Steps taken

For the completion of this paper a vast background research has taken place, in order to explore and express the correct terminology, forming in that way the fundamentals for the further discussion.

The first step taken has been to explore and give an understanding of the background history of Cyprus, mainly carried out by books of the past decade (Phileleftheros, 2011) as they explain the facts more clearly and thoroughly. On the other hand, more sources were used, to avoid the political messages that the old books may carry (Apostolou, 2006; Georgios A. Kostopoulos, 2017; Hellenic Republic,

Ministry of Foreign Affairs, 2018). The ongoing situation and the region of Famagusta, have also been discussed giving an insight of the situation for the reader to be able to follow.

The second step taken, was to research information on sustainability concepts. As sustainability is ambiguous and highly disputed, in terms of meaning and what it entails, it has been explored in the light of different theories and reports, including the report of “Our Common Future” (Brundtland & Khalid, 1987), the concepts on urban sustainable development defined by Basiago (1998) and Ravetz (2000), the concepts of economic, the explanation of environmental and economic sustainability given by Basiago (1998) and completed by Tittle (2011) and the Eco-city concept (White, 2002; Wong, 2011; Hald, 2009; Hu, 2009; Frey, Freiburg Green City, 2011; Mössner, 2016). Then the concepts of “Weak” and “Strong” Sustainability have been explained in order to give a clearer idea of the interaction between the three pillars of sustainability.

For the paper to gain more interest, a large number of papers and reports have been studied, gaining in that way general information on the subject, and broadening the understanding of the terms and the awareness of the world on such matters. The VERsus research paper has made it possible to include information on Sustainable rehabilitation forming a stepping stone between vernacular architecture and sustainable design (Mariana Correia, Letizia Dipasquale, Saverio Mecca, 2014).

Later on, the Famagusta Eco-city project has been analysed based on information gathered directly by the founder, who has made it possible to access private interviews with the architect Jan Wampler as well as an interview given to the BCC based on the Ted-X talk of Vasia Markides.

The concept of re-use is explained on one hand by referring to the eco-city projects of Buggi 50, the Vauban in Freiburg Germany and the Hammarby in Sjöstad, as large scale projects that include the transformation of urban settlements. And on the other hand, by completing the analysis of two small scale projects (single buildings) in the USA, as examples to follow.

After all the information has been gathered, the comparison and discussion make it possible to synthesize and conclude the paper.

1.5.2 References

The sources of information for the development of this paper have been Documentaries (Ted-X talk by Vasia Markides (Markides, 2015), Graphical references, Audio-visuals, Interviews (Wampler, 2017), Reports and Books, as well as the direct collaboration of the founder of the project Vasia Markides.

2. FAMAGUSTA PROJECT

2.1 How the idea flourished

Emily Markides, mother of Famagusta Ecocity Project founder Vasia Markides, was born and raised in Famagusta, and like all of its Greek-Cypriot inhabitants, retains a certain nostalgia and longing for her hometown that will move anyone who has the chance to hear her story. She, like many other Famagusta refugees, has never recovered from its loss. It remains like an open wound for those who left their belongings, their homes and their communities one day thinking they would return the next.

Emily's obsession with her hometown infiltrated Vasia's psyche so deeply that it launched her career as a filmmaker. In 2008, Vasia made a documentary short called Hidden in the Sand about the city and the larger Cyprus problem that has kept it in captivity. As both the filmmaker and a participant in the story, Vasia examines the fate of this city in captivity and her family's connection to it.

All of the work that Emily has done in launching eco-peace communities both in Maine and Cyprus, has been inspired by Famagusta and her dream to see it revitalized as Europe's model ecocity. The idea stuck and in 2013 Vasia decided to finally pursue a longer, more elaborate film on the subject. Emily, Vasia and her husband Armando, began meeting others who immediately saw the potential of this idea.

These extraordinary individuals quickly became a team ready to help make this ecocity happen. The idea started catching fire and The Famagusta Ecocity Project was born, and a documentary production with it.

2.2 Aims of the Eco-City project

Any reopening of the 44-year old militarily occupied ghost town of Famagusta, a district of historic Famagusta on the Eastern coast of Cyprus, presents a unique opportunity to learn from the mistakes of the past and rebuild for a better future. Yet it comes with significant risks. Without careful planning,

it could become just another unsustainable development in an already crowded Mediterranean tourism market, while cementing Famagusta as the second divided city in Cyprus.

Rebuilding Famagusta in the context of a model ecopolis promotes peaceful coexistence amongst all of Famagusta's inhabitants while embracing the latest ecocity technologies and turning Famagusta into a centre for peace and sustainability within a troubled region. The project ultimately aims to turn all of Famagusta into Europe's model Ecocity. This is a multi-track approach to environmental sustainability, economic prosperity and peace building. Those involved are local and international architects, permaculture designers, economists, business owners, urban planners, engineers, horticulturists, historians, artists, filmmakers, conflict mediation specialists and much more.

The aim is to prepare the communities for the implementation of the Famagusta Ecocity into a thriving cultural, economic and environmental hub. This takes much planning a preparation ahead of time before the area opens up again to human habitation, and after 40 years of separation between Greek and Turkish Cypriots, the road is certainly a bumpy one.

In addition to completing an architectural design studio, which brings five sets of ecocity ideas to the communities, a documentary film that will both tell the story of the city and show why it is the perfect laboratory for an ecocity to be born is one of the future goals.

2.2.1 Beneficial aspects and future challenges

Through an interview recorded by Vasia Markides, as part of an effort to create a starting point for future conversations, with the architect and collaborator Jan Wampler, he states that he doesn't only see the eco-city project - Famagusta, as a solution to the situation in Cyprus, but also as an opportunity to create a framework that can be followed by other European or Mediterranean countries in the future. Having in mind that Famagusta is an already existing city, even though most of the buildings are in a bad shape at the moment, it provides a great opportunity in order to build an eco-city following concepts like permaculture or agriculture.

Another beneficial aspect of re-transforming an existing city, is that factors that played a big role in the economy in the past, could be brought back to life and could be taken advantage of in a different way.

For instance, the pre-war Famagusta was the most developed city in Cyprus, having tourists visiting from all over the world and contributing in a high percentage the country's economy. Although tourism forty or fifty years ago was entirely different than what it is today, introducing new ideas and concepts, such as eco-tourism, could both help enrich the knowledge in several subjects by interaction of cultures and work backgrounds and could on the other hand beneficiate the economy of the place.

Jan Wampler also stated some of the challenges that Cyprus is facing at the moment, in terms of sustainability, emphasizing mainly on the lack of clean drinking water and water for agricultural use, that it will face in the future. He also stated the fragmentation of the island into two different cultures and the need for jobs in order to engage the young adults in staying in the country instead of migrating in search of money and better opportunities (Wampler, 2017). As part of the discussion, Jan Wampler stated some of the sustainability issues concerning Cyprus:

"I think in Cyprus there are many problems, but I think the first problem is water. Cyprus has an incredible climate for growing fruits and food, but without water it won't work. So we to find ways of getting rainwater and conserving water, finding more water - but not importing water, that is not the solution."

... "Of course, in Cyprus there is a very delicate, fragile, sensitive political issue that has to be resolved to have one Cyprus and I'm hoping that our Famagusta Project can help do that as a way of bringing Cyprus together. Which is another issue for me - I think architecture is not just making beautiful buildings (and I love beautiful buildings) but it's also making political statements, and that's why I like the Famagusta project, because it's more than just architecture."

... "So, those are two. I think job creation is a big issue in any island. I think for our young people, growing up, they have to feel they have ways of producing an income where they are. And I'm not so sure Cyprus has that as much as it should."

... "I think people are leaving Cyprus and I don't think that's good. If they want to leave of course, that's something else, but if they feel as though they have to leave because they don't have a future there, that's not good. So I think that's one of the big problems in Cyprus."

Other issues stated by the Ministry of Environment in the Kyoto Protocol established for Cyprus, are the high levels of Greenhouse gas emissions that are released in the atmosphere and actions are now taking place in order to change it. (The Republic of Cyprus, Ministry of Agriculture, Natural Resources and Environment, 2014) (Georgios Maroulis, 2014)

2.2.2 Solving the dilemma of Eco-city transition or creation.

The vision of the eco city as explained by Richard Register's book (1987) broadens up the term by taking into consideration the enhancement of biodiversity this model could produce, when all principles are applied. He emphasizes on the point that no such thing as an eco-city really exists in reality but the closest that humanity has ever been to obtaining it, was at the era of the old Indian or Southwest American settlements, generated by the proximity between households - compactivity-, the lively environment, the little waste created, the local materials used in construction and the appropriate blending with the environment.

Nowadays, although the term has not quite been reached in practice, many organizations have been working to create a real example using the principles of an eco-city. Richard mentions that "we see hints of an ecocity in today's solar, wind and recycling technologies" (Register, 1987).

Furthermore, he proposes that some of the strategies used to manage the healthy anatomy of the whole city, could be to use up less floor plan area giving strong incentives not to use a car, using renewable energy and green tools to make the city self-sustaining (Register, 1987). Also, having in mind that the Famagusta area, has been abandoned for over 40 years, the biodiversity of the city has already began to take over and gain terrain, so if we were to demolish the existing buildings and create new ones, all the hard work that the ecosystem has gained throughout time would be gone (Briony A. Norton, 2016). However, keeping in mind Register's perspective, and crossing it with the vision of Affolderbach for a Green Building transition, or Carroon that leads to eco-city principles through sustainable preservation, then probably the preservation method would really be the best option, or would it? (Julia Affolderbach, 2018; Carroon, 2010)

2.2.3 A realistic model

The objectives of the Famagusta Project seem strong for revitalizing the abandoned area and pragmatic for regenerating the population flow. Eco-city projects handled all over Europe, focus a lot on self-sufficient supply of energy for electricity production, as it is one of the most important principles of such project. The issues of energy supply in Cyprus are mainly into a separate debate. This could be understood by considering the conditions: the electricity is mainly produced by non-renewable resources such as oil, and only in a small part is produced by renewable resources, such as wind turbines

and solar energy. However, there is an ongoing attempt to increase the clean energy gain in the nearest future. A future eco- city in Cyprus, would however be able to generate and release electric power for other purposes, for example industry or to reduce consumption of fossil energy sources abroad in case of a more self-sufficient energy production.

2.2.4 Actions towards sustainability

The actions and results that the Famagusta Project proposes in order to reach a sustainable future, are still only theoretical and have not been completely established.

The inaccessibility of the sight and the still ongoing political issue, make it impossible to study the overall state of the buildings. Although, before any plan is finished, the conditions of all the buildings from structure safety, earthquake safety, general building codes, mold growth, and general feasibility of retrofitting and rehabilitation must be conducted. All of these items are now governed by updated building codes that did not exist when the buildings were built, around 50 years ago. In fact, in the last 50 years, codes throughout the world have changed assuring protection for people using the buildings.

Through further investigation and strict observation, it will be determined whether the buildings will be adequate for green retrofit transformation, mostly relying on the economic factor. For instance, in many cases it may not be feasible, if the cost of reparation exists the cost of demolishing and re-building, even though both the economic factors and the environmental will be taken into account. Buildings of two or four stories away from the coast may be able to be saved much easier, whereas tall buildings in the front line of the coast might be deteriorated to the point where they can no longer be repaired.

In order to secure the social and cultural factor of sustainability, all historic buildings, churches, schools, civic buildings and buildings of memory should be kept no matter what the cost. This might mean that some buildings will be kept as ruins but on the other hand, the importance of keeping the identity and memory of the place alive is high.

Keeping in mind the starting approach of a sustainable Eco-City, several factors have been considered. Some of the actions taken into consideration have been summarized in the list below:

- *Food production* for both the citizens in the area and local hotels and restaurants.
 - *Small gardens* for individual owners should be on vacant lots, on roofs, and in the area west of the site.
 - *Exportation* to other areas of Cyprus as well as other countries, producing income and international recognition of the traditional products.
 - The food *types* will use *as little water as possible*.
 - Some areas will be set aside for *permaculture*, to leave as they are for both wildlife and plant life to flourish.
 - Provide more water or keep water that comes during times of rain. As it is a great concern in Cyprus.
 - Energy creation from solar and other means to produce energy for the area without relying on outside sources.
 - Passive building construction, ensuring a greater energy efficiency through good design: shading devices, solar gain, and energy saving materials
 - The re-use of materials from the demolished buildings will be carefully studied in order to expand the lifecycle of every material.
 - Local production will be the main source of construction materials.
 - The area should be redesigned for pedestrian movement, using the automobile as little as possible.
 - Mass transit will be designed to provide correct connection between different areas.
 - Advanced sewage systems will be designed for both gray water and black water, suggesting a recycling cycle, producing fertilizer and watering of agriculture.
 - Eco-tourism will be promoted
 - Opportunities creating employment possibilities
-

3. RE-ADAPTION OF EXISTING SETTLEMENTS INTO ECO-CITIES: EXAMPLES FROM THE PAST

By looking at the two different models, it is obvious that they solve different aspects of sustainable development. A combination of elements from both models might be possible to solve a wider range of problems in the regional plan. Examples of existing cities being transformed into Eco-cities will illustrate how the model of Famagusta could be a successful reality project.

As the interest for environmentally friendly development of the urban environment has grown, new ways of establishing eco cities has emerged. In Asia and middle East, as well as in different European cities, there is a variety of projects ranging from large-scale resort developments to mixed-use communities and big re-adaption of master plan developments (Tai-Chee Wong, 2011). This section focuses on the redevelopment of existing areas and the use of mixed-use plans where an old city could be tailored to meeting the challenges of the modern world.

First there will be an overview of the city of Freiburg in Germany, through two different examples: (a) the construction of the first sustainable neighbourhood, Vauban, in the mid-1990s and (b) the green retrofit of the 1960s' high-rise building Buggi 50 in 2011. Lastly as part of the discussion for the larger scale practices, The Hammarby in Sjöstad, Sweden will be analyzed.

Then there will be a discussion based on a smaller scale, moving from the urban renewal to the transformations of buildings, that could be followed by designers in the Famagusta project. The first building is a transformation of an existing residential house, constructed in 1917 to a building to host a non-profit educational organization, called Harris Centre of Conservation Education. An additional overview of the project that has been carried out for the restoration and incorporation of sustainable elements of an emblematic building in the American territory, the Trinity Church in the Boston city, will be used as a conclusion to the scheme. These four examples could alternatively be interpreted as transformation examples with additional ecologically oriented features, in terms of material use, energy efficient buildings, waste recycling schemes, etc.

3.1 Freiburg, Germany

The rise of the eco-city movement in Freiburg had its origin in an action opposing a planned nuclear power plant in the 1970's which later became the symbol of a broad-consensus, green policy-making. In the 90s, the first sustainable suburbia called Vauban was established. Here, several of the activists against the power plant settled down. In 2011, high-rise buildings from the 1960s, called Buggi 50, undergone a green retrofit that was financed by the rising rent of the apartments. As a result, only four out of 90 families moved back to their houses after the retrofit was done. The project showed that the implementation of sustainable technical improvements produces higher rental costs and lacks social aspects (Mössner, 2016). However, Freiburg as a whole, has successfully arranged an 'eco-system' of techniques, markets and politics that set new standards for implementing sustainability at the local level and in all societal fields, seemingly including all parts of society (Mössner, 2016).

(a) **Vauban** | The sustainable neighbourhood of Vauban represents an ideal of green urbanism,



FIG. 7: Solar Settlement in the Vauban quarter in Freiburg (Germany), Elly-Heuss-Knapp-Straße. (Thorpe, 2018)

through applying an economically affordable and socially liveable approach. Vauban was promoted not only as 'inner city, car-free and colourful but also as a place where activists from the old days could finally settle (Frey, 2011, p. 140)

Vauban is divided into three parts. One part developed the smallest section in the eastern part of Vauban, was designed by the investor and solar architect Rolf Disch, that consists of plus-energy buildings for single families and a solar settlement

which are protected from traffic emissions (Tim Freytag, 2014). A second and larger part of Vauban consists of apartment buildings constructed by a variety of architects and 'cooperative homeowner groups' (Baugruppen) - communities of 10-15 people, who started to plan, develop and finance the new buildings together.

The third, and smallest, part of Vauban consists of some of the old barracks that had been squatted directly after the withdrawal of French army troops. Between these barracks and on a still abandoned site at the entrance of Vauban mobile squatters settled down and underlined the neighbourhood's aspects as tolerant and colourful. The one at the entrance, however, was subsequently removed in favour of constructing the 'Green City' Hotel. Vauban is not only a symbol for technical feasibility (plus-energy and passive/low energy standard buildings), but also stands for tolerance and participation. It

is specifically the mobile squatters and the alternative settlement initiative of six old barracks that had been squatted in the 1990s and consequently transformed into an independent housing project (called SUSI) that symbolizes this specific atmosphere of tolerance of local residents and public administration towards alternative ways of being, living and thinking (Mössner, 2016).

Freiburg Eco-city treats to be environmentally sustainable by combining future- oriented strategic urban planning, committed citizens that are willing to protect the environment and live a sustainable lifestyle, as well as a strong city council that can make path-breaking decisions and local economies that pursue environmental goals (Frey, 2011, p. 9). Furthermore, from this example we keep the importance of the public participation of stakeholders and users, from the beginning and throughout the planning process, in the development of sustainable areas (Julia Affolderbach, 2018).

(b) Buggi 50 | The green retrofit of Buggi

50 demonstrates how technical innovations of sustainable buildings can also be brought to disadvantaged neighbourhoods. In 2009, the City of Freiburg started to transform a series of prefabricated high-rise buildings, social housing from the 1960s, into low-energy buildings. In 2011, the construction of the first green retrofit had been accomplished and a high-rise building from the 1960s, named 'Buggi 50', has been adapted to passive energy standards. The green retrofit is part of a larger urban development project that covers the socially disadvantaged neighbourhood of Weingarten.

The main appearing issue was the significant reduction of the apartment sizes, together with the increased rents that resulted in the intend to perform a green retrofit while investing in infrastructure



FIG. 8: Buggi 50. Photo: Johannes Vogt, Mannheim / Sto AG, Stühlingen

and the built environment. In the building itself, three rather diverse aspects come together: a poor urban under-class, technical implementations of low-energy standards and economic aspects of increasing rents.

These aspects were moderated by an ambitious participation process, without which most of the residents would have not even understood the mechanisms of a waste-heat-recovery system. The participation process not only accompanied but also

basically enabled the green retrofit of Buggi 50. The retrofit also led to the displacement of many former inhabitants and caused higher rents for those remaining. Due to economic and other constraints, however, the participation process was interrupted during the retrofit of the second and third building. Nevertheless, the standard was also applied to the other high-rise buildings in Weingarten (Julia Affolderbach, 2018).

3.2 Hammarby Sjöstad

The project is a full-scale demonstration site. It represents an example of an integrated urban redevelopment approach of the area aiming for innovative technological and environmental solutions. The site is located on a former industrial and harbour brownfield area on the south side of Hammarby Lake and to the south of the city centre. The main goal of the project is to expand the inner city into an attractive water setting, while converting a rundown industrial area into a modern, sustainable, mixed used neighbourhood. Hammarby sjöstad has been planned with a dense settlement structure with typically 4-5 story buildings in a compact neighbourhood outline, but with reasonably spacious green courtyards. The plan is expected to construct around 1 000 apartments for more than 26 000 inhabitants, with 6 m² workspace/inhabitant, as well as achieve the revitalization of the brownfield

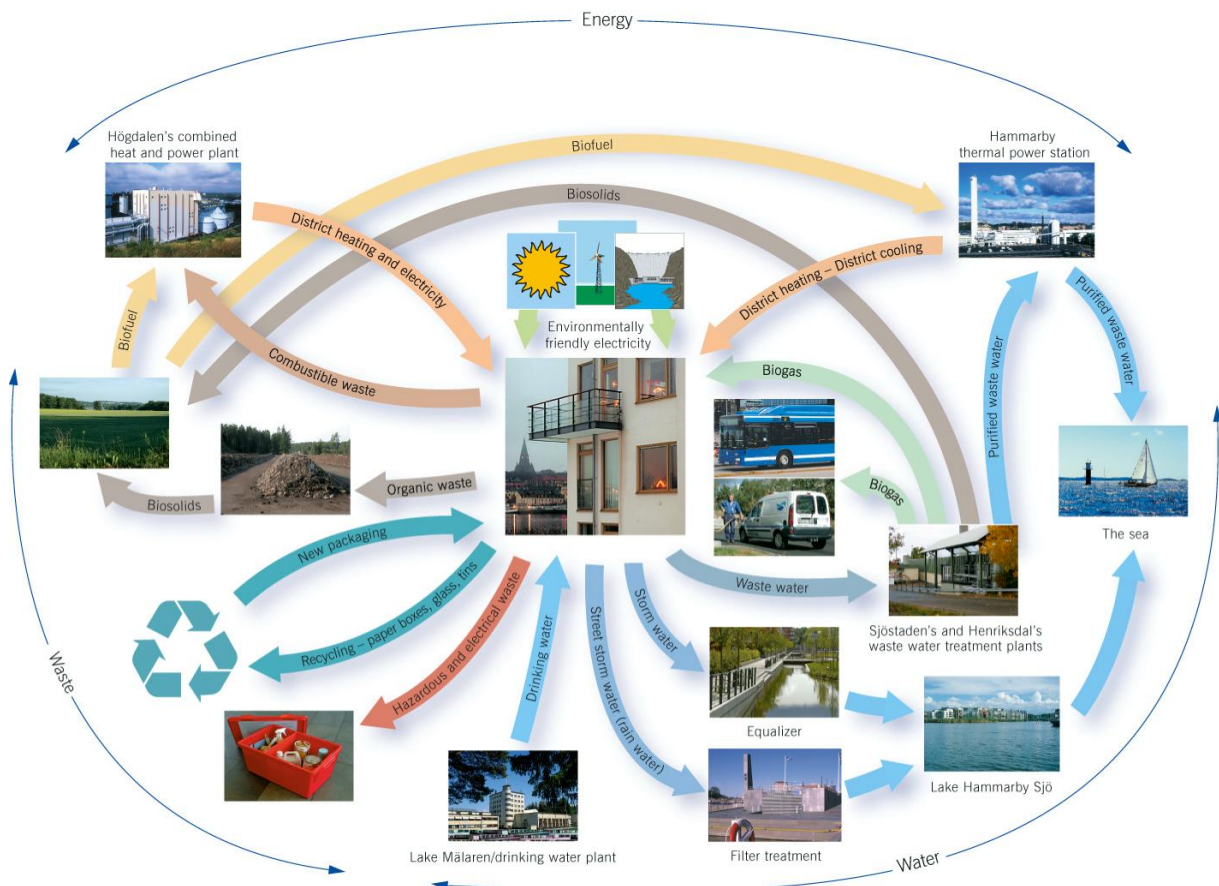


FIG. 9: The Hammarby Model. Stockholm Water Company in Suzuki. Source: www.HammarbySjostad.se land. Hammarby Sjöstad adds a new layer to Stockholm's development, merging a mix of traditional inner-city perimeter blocks and open and contemporary urban zones, with well-connected public transportation and bicycle lanes that lead to the centre of the city.

The project also sets other targets that aim for a reduction in the annual energy consumption, water conservation, the application of renewable energy sources, and the implementation of integrated transportation solutions. In order to achieve those goals, Stockholm uses a long term plan and a model that is carried out by the Public Authorities. The model used is called a “cyclical system”, that will replace the traditional linear one (Suzuku, 2010), as seen in Figure 8.

This model implies the expansion of the Stockholm inner city into an old shattered neighbouring industrial area, that has not been given the chance to revitalize until the first rehabilitation plan was introduced in the early 1990s. This process is aiming to unlock land and property values, enhance the biodiversity, and provide green areas as well as convert the brownfields in a developed mixed use neighbourhood.

It could be a good example to follow for the expansion plan of Famagusta. Although, Hammarby is included in many publications, for example in the recent Ecological Design by Nancy Rottle (2011), there are still a few weak points that need to be kept in mind.

3.3 Harris centre for conservation education, Hancock NH, USA

Fig.10

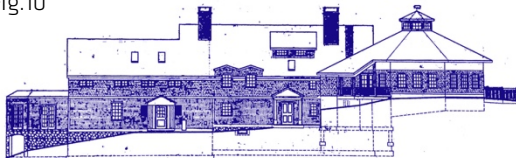


Fig.11

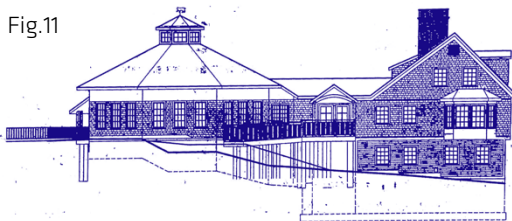


FIG. 10 & 11: Local materials and timber framing created a new dynamic daylight space. Use of expanded foam to avoid energy loss. Durability is chosen over heritage and natural materials. Source: Carroon, 2010, Sustainable Preservation: Greening Existing Buildings, p. 28).

The Harris Centre was originally built in 1905 as a private home. In 2003, a non-profit organisation, decided to renovate it and utilize the existing building to fulfil a better serve, as an environmental education centre. In order to produce as little environmental impact as possible and maintain the original building, a firm commitment was made, to preserve as much of the original structure as possible and to utilize sustainable building practices. Also, the project has engaged to use passive technological methodologies and stay as far as possible from modern mechanical systems depended on off-site energy sources.

The initial concerns of the project were to produce energy efficient facilities that enable recycling, good indoor air quality, resource conservation as well as the use of durable materials made from led or renewable products. To meet that goal, the project consisted of the use of composting toilets with an in-house waste treatment plan, super insulation and sealing of the building envelope, a wood-pellet boiler, which is a fully automated hydronic system that uses an external silo and auger system to carry pellets to the boiler together with solar panel, contribute to the energy conservation and energy generation of the building. The utilization of local materials such as oak wood, maple and birch, fulfil the goal for durable, recycled, natural and renewable materials in the construction (Carroon, 2010).

3.4 Trinity Church, Boston, USA



FIG. 12: Photo, exterior overview, front elevation, historical · Trinity Church · Boston, Massachusetts. (1872-1877). Source: www.greatbuildings.com



FIG. 13: The new design of the 4000 wooden piles submerged in water, routes all storm-water into drywells for dispersion back into the ground to maintain consistent groundwater levels and protect the integrity of the pilings. Source: Carroon, 2010, Sustainable Preservation: Greening Existing Buildings, p. 32).

The National historic landmark dating back to 1877, has been through a restoration in 200-2005 aiming to upgrade its state and its environmental status. Having in mind that the Trinity Church is considered one of the most important buildings in the United States the process had to be even more attentive. Several innovative elements of sustainable technology have converted the historical church into an emblematic building of the 21st century. The religious character of the building, demanded the expansion of it to be able to withhold a large capacity of people wishing to attend to the many hundreds programs hosted by the vibrant Episcopal parish. Despite the challenges in order to maintain the church

operational throughout the restoration period, the project managed to meet all the goals it has set at the beginning of the mission and beyond.

Some of the points of have been, the expansion of the site utilization and the incorporation of rainwater harvesting systems that collect the rainwater and follows a circle in order to recharge the water table. Furthermore, a new geothermal heat pump system generates energy, reducing in that way the church's demands by 40 per cent. The old foundations and structure of the building were re-used as well as some of the materials from the original construction (Carroon, 2010).

4. COMPARISON

4.1 Vauban in relation to the Famagusta Project

As the aim in Famagusta region is to re-urbanize the abandoned area that has been left untouched after the invasion of the Turkish troops, keeping in mind the important heritage sites, the green areas/farmland and the quality of life, and at the same time to looking to produce lower levels of CO² emissions, the sustainable development of Vauban city that interprets the reuse of existing buildings and the development of inner-city settlements, is what makes this project a possible example to follow.

Furthermore, the Vauban project incorporates three types of sustainable planning, including both new construction and rehabilitated buildings, that could be used in the Famagusta project. Also the connection between the three areas could help complete the idea of expansion of the walled city, while reducing the effect of fragmentation.

Another important factor that should be kept in mind in this project is the correlation between the three pillars of sustainability, economic, social and environmental.

4.2 Buggi 50 in relation to the Famagusta project

This example is based on the rehabilitation of an existing apartment area into a green, sustainable site. The same idea could be implemented in the Famagusta region in order to give the existing abandoned areas of the region, a new residential or public use by re-adapting them to the needs of the modern world and the framework of the eco-city, keeping in mind the environmental challenges. One should always learn from the mistakes of the past, so in order for the economic orientation to be successful, the moral and social elements that accompany the urban politics in the public disclosure should be carefully studied and implemented.

4.3 Hammarby Sjöstad

The redevelopment of the Hammarby area, is basically adapted to an industrial area without much historical background, which would not be suitable for the Famagusta area.

On the other hand, the correspondence between different types of environmental sustainability, including the cycle of grey water treatment, energy production and export and the incorporation of urban gardens, all form part of the framework marked for the Famagusta project. Therefore, the Hammarby model shown in fig.8 should be studied in detail and engaged to the project.

4.4 Harris centre for conservation education in relation to the Famagusta project

Even though such examples of regeneration are due to the lack of cultural interest towards the original building, as the historical timeline is completely changed after the restoration, it is useful to see how the change of identity of several buildings could mean that they have another chance to fulfil a purpose in the modern society. Therefore, such transformations could be used at buildings that need a character renewal, as their original purpose is no longer needed, having in mind that the communal or traditional buildings that carried out a specific mission 40 years ago, they are no longer needed in a modern city.

4.5 Trinity Church in relation to the Famagusta project

The high historical value that the church adds to the region of Boston, will be of similar interest as to the many sights that the city of Famagusta hides. Many of the important monuments of the city have been abandoned for more than 40 years and they have an additional conservational value as they underwent alterations during the war in 1974.

In addition to the projects commented above it is worth complementing the research with buildings that have been developed in a different way. For example buildings that are demolished, or that have suffered a natural deconstruction, could be a source of materials to be recycled and re-used in a different function. As there are usually several materials involved in a traditional construction as stone, bricks, glass and wood, mostly as window frames or doors, all materials could be listed and analysed in order to be re-used in a way in new construction or in a renovation process. It is important to keep the materials in the lifecycle of construction as long as possible in order to create buildings with lower CO2 emissions and energy consumption in the overall ratio.

5. DISCUSSION

“How does one build a utopian space? And once one has built this space, how does one then create the citizens who will populate the space as one wishes?” (Amy Bingaman, 2002)

The study of sustainability is still in its infancy, and the contribution of historic preservation to the broader field of environmental sensitivity is gaining appreciation. Having in mind that Cyprus is an island and the materials availability is limited nowadays, forty or fifty years ago, the availability was even more restrained. Even though this might have negative effects in other situations, in this project is highly beneficial, as it provides a “green” approach from the start, providing a deep attachment to the land.

The use of locally available materials that have already and carefully been gaining the necessary properties to withstand any climate and terrain changes in a long term, will be taken advantage of to prevail fast alterations. The use of durable materials having been used in the right way, means that many historic buildings already meet many of the principles outlined for new structures intended to be of a sustainable design (Park, 1998).

The discussions about the global vision of making cities green and sustainable, are rising having many European cities mainly in Northern Europe as the starting point, in order to reach the ideal system. The case of Cyprus and Famagusta is a completely different subject as the city has been “frozen” into time to 40 years ago, before the pollution and globalization has been the main concern of the urban development. In order to decide if such a case is beneficial or contradictory, further studies should be carried out, investigating the state of each dwelling and building and providing a master plan of how the urban territory could be changed in order to meet the sustainability principles.

A sure point is that one of the most important factors will be played by the society as the willingness to re-habit the city and the adaption to this new way of life is crucial. The social agenda hinges on the themes of equity and participation, which in other countries contains a complex structure, but in Cyprus the eagerness of the old citizens of Famagusta to return to their homeland is high and could possibly be the leading force into achieving the needed participation and bargain.

In no way, this idealistic thinking in rearranging cities and societies could assume the sudden interest in nature or altruistic thinking from people, that people will stop using their cars or that they will be willing to live in smaller spaces. Nevertheless, we cannot assume that business will sacrifice profit for principles, or that those with power and money will hand them out to those without. If what we want to create is a realistic model and not a utopian vision, we could only move towards the potential for combining enlightened self-interest with social-benefit, aim towards a modernized government and solve the problems that society will face in the future, step by step.

Cyprus has already agreed to meet the 2020 framework set by the European Council, but in order for Famagusta to adapt to any of these concepts, new principles should be carried out. In order to assign this case into one group and finding the right framework, the first question would be whether the area of Famagusta would be considered as a City-centre or a Suburban area, a development area or a regional area in the global scale? The answer could be quite ambiguous as looking through the spectrum of the island of Cyprus, the area in question covers a total of 20% of the total region of Famagusta and possesses the most important touristic area and hotel buildings of the pre-war era. A rather large area then is conceived in the Ghost city of Varosha, if it is compared to the urbanization of Cyprus but if it is compared to any European city, where the idea of a city is completely different, then it would be considered as a Suburban area. Without doubt in any case it would be contemplated as a “Development Opportunity area”, where the scale of change and regeneration is huge.

Development opportunity areas, can become the generators for exploring new and creative urban environments for working and living. Looking back to concepts of sustainability already mentioned, in order to proceed to such change, we need to focus on an integrated long term strategy which includes: (a) an integrated environmental management and best practice within city-region framework, (b) innovative industrial, commercial and residential clusters, (c) long term approach (depending on current situation), (d) coordination of economic development with local labour markets and public services and lastly (e) cultural enhancement and search for unique identity.

At this very moment, Famagusta is an existing city without any activity going on, therefore it could be debated whether re-vitalising the city would create an environmental footprint to the region. As the city has no activity, there are no CO₂ emissions being released, the air is not polluted (without taking into consideration nearby cities), the energy consumption is equivalent to zero and the biodiversity is untouched, therefore the city as it is, is “sustainable” in many ways. However, sustainability looks at three scopes and for it to happen, all three have to be taken into consideration. Therefore, in this case, the environmental sustainability would be far met, but the other two factors are not being considered.

Furthermore, it succeeds in finding the urban form that includes adaptability, flexibility and self-organization, which is missed in cities that are in use. All these qualities contribute to creating a “sustainable built environment” as the goal for equitable and efficient location and land-use patterns could be met. The maintenance and revitalization of local services and jobs, promoted by spatial patterns of clustering and consolidation would promote the economical factor, whereas the enhancement of the cultural heritage and the urban ecology would favour the development towards the socio-cultural sustainability.

On the other hand, the ecological footprint that the existing buildings create or created in the past in order to proceed to their construction, is now occupying land that could otherwise be used to provide woodland. In order to strengthen the long-term trend in energy demand from the existing buildings, conservation of buildings in good conditions as well as dematerialisation and adaption of buildings in not so good conditions could be considered. The re-use of materials that have once been used in previous constructions, would be beneficial for the footprint created, as such re-engineering of the urban fabric can be summed up with a target of reducing carbon emissions from the building stock.

The urge to return to the abandoned city of Cyprus and the idea of revitalising it through a sustainable concept is established as the main scope of the project of Famagusta. Care must be taken when considering the model of development that will be followed and the density of the urbanisation, since it can have a negative effect on the sustainable development, in terms of land use, consumption and traffic. As stated earlier, the most sustainable solution to these challenges is to follow a degrowth model. An effort to obtain a high level of reusable space and limit the consumption and continuous evaluation of sustainable solutions and improvements that aim for more environmentally friendly planning, should therefore be aspired for, to honour the degrowth movement and its values.

Eco-city planning does not take all three pillars of sustainability into consideration, focusing mainly on the environmental pillar while sustainable planning treats equally the economic, social and environmental aspects. This leads to a very narrow focus, that affects important elements of the functional society in a negative way, e.g. housing prices are higher in these cities, affecting the diversity of people living there, resulting in segregation and poor social sustainability. A real-life example is the one mentioned above, about the Buggi 50 context in Freiburg Germany, where under an intend to provide sustainable standards and techniques more widely accessible, the area of the apartments had to be reduced to fit the energy saving plan and the owners ended up paying more money per square meter.

Another example of this is the development of the eco-city Masdar outside Abu Dhabi, where the focus on obtaining a zero-emission and a low carbon footprint goal was strong, but other elements as biodiversity were ignored. The enterprisers had no duties of social caretaking neither for workers nor inhabitants. The government sees the project as a part of the city's economic growth, and not as a challenge to capitalistic economic growth (Cugurullo, 2016).

On the other hand, the compact city model through choosing to build up instead of sprawling out and densifying the inner-city area, aims to reduce the environmental footprint on the suburban segments. Also, reducing energy use and greenhouse emissions, especially from transportation, promoting environmentally friendly travel modes and protecting surrounding natural areas and farmland against conversion are all important parts of the intentions behind the compact city model. In addition, livability concerns and 'fashionable' urban lifestyles support this model.

The eco-city model has a deeper environmental focus, that is further concerned on the waste water treatment plan and renewable energy strategies. Even though some practices of the model disregard important elements, the focus is much needed in a time where the global environment is under enormous pressure. The compact city ensures an effective use of space, lower housing prices, and ensures diversity as well as the availability of culture.

In the eco city model, it is evident that the focus on the environment is the segment in the model that makes it sustainable. The holistic and cyclic approach to renewable energy in a city and societal context the compact city on the other hand, is a sustainable model as the use of space it provides is effective, and promotes public transport through densification. By building on brownfields and reusing abandoned land that has been constructed in the past, suburban natural sites are protected from being transformed into urbanized areas (Xue, Walnum, Aall, & Næss, 2016, s. 8). Protecting agriculture and undeveloped land is one of the key elements in the current plan that is insufficiently handled according to sustainable development measures.

6. CONCLUSION

In the pursuit of obtaining sustainable development, the direct way to reach this destination is through the theories of degrowth. This is due its overarching intervention in the foundational way of consuming, thinking, structuring and developing. But this fast track to sustainability demands an ideological and radical shift. With this radical movement some radical, ethical questions will arise, and these should be evaluated considering the greater good together with the immediate local/regional effect. The implication of the theory on some parts of the plan, such as policies on the downsizing of agriculture area, is a small but realistic step towards the destination of sustainability.

As stated above, all humans should have the possibility to live a dignified life, not only today but in future generations too. Therefore, what we aim for is a harmonized sustainability that connects the issues of the environment, human well-being and the redistribution of goods, the values of degrowth are taken into consideration. Urban sustainable planning is the idea that a city can be organized without excessive reliance on the surrounding countryside and be able to power itself with renewable sources of energy, which ideally creates an enduring way of life across the four domains of ecology, economics, politics and culture. When all four domains are covered and when interdisciplinary cooperation and base knowledge is implemented, then sustainable development can be accomplished.

By leaving aside the thought of an Eco-city as a utopian idea, where the key features have a strong focus, and generating a plan according to these values, the preservation of the environment is clearly prioritized, which is necessary for a sustainable development. A clear statement of values and prioritizing should continuously and in a consistent way is important in administrating the development, and this should be reflected in the plan. A prioritization in the plan will further enhance the awareness in general in the society. A collective change in mentality is needed for truly attaining sustainability.

The Famagusta area, is by far the most sustainable city of Cyprus at the moment, as it is abandoned and would be the most appropriate to undergo such change, being both a model to follow by other cities, following the environmental framework adapted, as well as a solution giving for such political and cultural differences.

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8. FIGURES

FIGURE 1. Summarized plan of territory arrangement in Cyprus. Own production.

FIGURE 2. Photograph by (O'Toole, 2016)

FIGURE 3. Photograph by (Rhinocarhire, 2009)

FIGURE 4. Weak Sustainability. Three circles of sustainability. Own production.

FIGURE 5. Strong Sustainability. Three circles of sustainability. Own production.

FIGURE 6: Illustration of sustainable city. own production.

FIGURE 7: Solar Settlement in the Vauban quarter in Freiburg (Germany), Elly-Heuss-Knapp-Straße. (Thorpe, 2018)

FIGURE 8. Photo: Johannes Vogt, Mannheim / Sto AG, Stühlingen

FIGURE 9. The Hammarby Model. Stockholm Water Company in Suzuki. Source: www.HammarbySjostad.se

FIGURE 10 & 11. Local materials and timber framing created a new dynamic daylight space. Use of expanded foam to avoid energy loss. Durability is chosen over heritage and natural materials. Source: Carroon, 2010, Sustainable Preservation: Greening Existing Buildings, p. 28).

FIGURE 12. Photo, exterior overview, front elevation, historical · Trinity Church · Boston, Massachusetts. (1872-1877). Source: www.greatbuildings.com

FIGURE 13. The new design of the 4000 wooden piles submerged in water, routes all storm-water into drywells for dispersion back into the ground to maintain consistent groundwater levels and protect the integrity of the pilings. (Carroon, 2010, Sustainable Preservation: Greening Existing Buildings, p. 28).
