

Master Thesis

ECOTOURISM OPPORTUNITIES IN EAST ATTICA

Kyriakos Georgas

S2832682

Supervisors: 1st Dr. Athanasios Votsis, 2nd Dr. Florence Metz

Academic year 2021-2022



**UNIVERSITY
OF TWENTE.**

Abstract

Tourism is the most important sector of the Greek economy, however, due to the rapid environmental changes, the need to create a more sustainable model is necessary. Ecotourism is linked to various dimensions of sustainable development: Socioeconomic growth and environmental conservation. The main aim of this master thesis was to examine the efficiency of potential ecotourism projects in East Attica, considering a proposed policy guideline in order to eliminate “greenwashing” effect. Suitability analysis was applied, showing that East Attica contains the characteristics that an ecotourism destination should have. In addition, cost-benefit analysis was conducted considering two scenarios non-action and action. The latter involved investments for the creation of 9 ecotourism facilities within the policy guidelines considering various direct and indirect ecological and socioeconomic benefits and costs while in the first scenario status-quo remains. A net present value of 21,885,737,82€ and a benefit-cost ratio of 1.70 were obtained using a 5 % discount rate and 10-year planning horizon. The results showed that ecotourism activities in East Attica can generate important economic, social and ecological “profits” indicating that it would clearly be a beneficial project for the regional unit and therefore it should be selected instead of the non-action scenario.

Acknowledgement

First of all, I would like to express my sincere gratitude to my first supervisor Dr. Athanasio Votsi for his continuous support and willingness to guide me throughout this process. This is the first thesis I have ever written and i truly believe that I got the maximum help from Dr.Votsi who offered me invaluable knowledge that I will apply in my future life. Also, I want to give special thanks to my second supervisor Dr. Florence Metz for her valuable comments and feedback. Furthermore, I would like to thank my family and friends for their unconditional support during this year. Finally, a big thanks to MEEM faculty and to my classmates for making this year unforgettable.

Table of Contents

Abstract	2
Acknowledgement.....	3
Table of Contents	4
List of figures	6
List of tables.....	6
Abbreviations	7
1. Introduction.....	8
1.1 Background.....	8
1.2 Problem Statement	10
1.3 The Policy Context of Greek Ecotourism	11
1.4 Research Objectives	14
1.5 Research Question.....	14
1.6 Motivations	15
1.7 Thesis Outline	15
2. Research Approach.....	16
2.1 Theoretical Framework	16
2.2 Research Framework.....	19
2.3 Research Unit	20
2.4 Research Limitations	20
2.5 Ethics Statement.....	20
3. Methods	21
3.1 Cost-Benefit Analysis.....	21
3.1.1 Theoretical Background.....	21
3.2 Suitability Analysis.....	25
4. Results	29
4.1 Costs	29
4.1.1 Ecotourism Facilities.....	29
4.1.2 Land Market Value	32
4.2 Benefits.....	34
4.2.1 Economic and Social Benefits.....	34
4.2.2 Ecological Benefits.....	36
4.3 Discounting and Sensitivity Analysis	41
5. Discussion	47
6. Conclusions-Recommendations	50
6.1 Conclusions.....	50
6.2 Recommendations for further research.....	52

References.....	53
Websites.....	58
Appendix A.	60
Appendix B.....	61
Appendix C.....	62

List of figures

Figure 1: Corine Land Cover (CLC) 2018 https://land.copernicus.eu/	9
Figure 2: Attica Regional Units (Fameli, Kyriaki Assimakopoulos, 2019)	9
Figure 3: Derived from the Ministry of Tourism web page(https://mintour.gov.gr/)	13
Figure 4: Northeast Attica(https://earth.google.com/)	26
Figure 5: Southeast Attica (https://earth.google.com/)	27
Figure 6: Athens urban area and East Attica (https://earth.google.com/)	27
Figure 7: Steps of East Attica’s socioeconomic empowerment	36
Figure 8: Comparison between conventional hotels and ecolodges emissions.	41
Figure 9: Chart Column Summary of PVC and PVB	43
Figure 10: Line Graph (Long term scenario)	46

List of tables

Table 1: Greek tourism objectives (OECD, 2022)	13
Table 2: Costs and Benefits	25
Table 3: East Attica’s areas selection criteria	28
Table 4: CBA steps (Boardman et al., 2006)	29
Table 5: Ecotourism Facility basic characteristics. (Shams, 2006)	30
Table 6: Land Value calculation criteria	33
Table 7: Average-total prices and their increases via ecotourism.(Ministry of Finance, 2022)	38
Table 8: Tax price per zone(sq.m)(Ministry of Finance, 2019)	39
Table 9: Monetization of main costs and benefits.	41
Table 10: Discounted costs and benefits.....	42
Table 11:1 st scenario (9%)	44
Table 12: 2 nd scenario (7%).....	44
Table 13: 3 rd scenario (9% dr, 9% rvn. decrease)	44
Table 14: Long term scenario	45
Table 15: CBA.....	49

Abbreviations

BCR	Benefit Cost Ratio
CBA	Cost-Benefit Analysis
CEA	Cost-Effectiveness Analysis
EDF	Environmental Defense Fund
ENFIA	Uniform Real Estate Property Tax
EMAS	Eco-Management and Audit Scheme
ESPA	Partnership Agreement for the Development Framework
FSC	Forest Stewardship Council
GIS	Geographic Information Systems
GGDP	Global Gross Domestic Product
IRR	Internal Rate of Return
ISO	International Organization for Standardization
MSB	Marginal Social Benefit
MSC	Marginal Social Cost
NPV	Net Present Value
PVB	Present Value Benefits
PVC	Present Value Costs
SDGs	Sustainable Development Goals
SET	Social Exchange Theory
TCF	Tourist Carbon Footprint
WTTC	World Travel and Tourism Council

1. Introduction

1.1 Background

The tourism-travelling sector has been one of the most significant and profitable economic activities over the last 50 years globally (Spilanis & Vayanni, 2004). According to World Travel and Tourism Council (WTTC) in 2019 the contribution of the tourism industry to the Global Gross Domestic Product (GGDP) was around 10% (World Travel & Tourism Council, 2019). Although conventional tourism is beneficial for the global economy, it is also one of the main reasons which have caused adverse environmental impacts (Drakopoulou, 2020). Additionally, the rapid urbanization that has been observed during the last decades has led to several negative environmental impacts and combined with the projection that by 2050 more than 60% of the world population will live in urban areas an efficient but also sustainable tourism model for urban areas is necessary (Population Reference Bureau, 2022).

Ecotourism considers the connection between tourism and the sustainable development of the examined area and thus it can be more than important in the balanced economic, environmental, and social advancement of an area that can be considered as a traveling destination locally or globally. Ecotourism follows the principles of sustainable development, mandating that the tourism industry takes into consideration the current ecological changes-impacts to meet the needs of the present without compromising the future generations' ability to travel into a sustainable environment (Weaver & Lawton, 2007). In short, efficient ecotourism ought to improve the local economy, protect and preserve the environment, to ensure long-term sustainability (Tisca et al., 2016).

However, ecotourism originally focuses on rural areas with affluent natural environments (seas, lakes, rivers, jungles, mountains etc.), especially in protected sites (Ramsar and Natura 2000 areas) and is related to activities that take place in wildlife. As a result, the term urban ecotourism has been derived in order to promote this type of tourism in urban environments. The rapid urbanization that has occurred during the past decades has led various researchers to explore sustainable tourism opportunities in urban areas (Wu et al., 2010). According to Sarkan (2016), urban ecotourism can also be defined as "ecological tourism that takes place within a city (as opposed to in nearby natural areas). As a phenomenon, it includes those visiting, (as opposed to living in), a city for tourism, and those people, organizations, processes, and facilities that serve them, as long as the same basic ecotourism criteria that

apply for rural areas are met" (Sarkar, 2016). Its main goals are a) protection of urban environment, biodiversity and local culture while informing tourists about the environmental issues and sustainable development necessity of an urban area b) maximizing a region's social and economic benefits through residents' engagement in the ecotourism sector (entrepreneurs, hosts, farmers etc.) c) decrease of an urban area's environmental footprint (Wu et al., 2010). Although similarities between ecotourism and urban ecotourism goals can be observed, urban ecotourism might have some advantages as it uses mostly existing infrastructure, can attract more tourists as it is not dependent on natural landscapes (less season-specific) and can steer the views of the residents of a metropolis towards environmental issues effectively (Jegdić & Gradinac, 2016).

Greece is a country located in Southern Europe. Athens (Figure 1) is the capital city of Greece with a metropolitan population of around 3.75 million people living in the region. Attica is the region in which Athens is located and it actually covers the whole metropolitan area of the capital which is divided into the following regional units: Central Athens, North Athens, West Athens, South Athens, East Attica, West Attica, Piraeus and Islands (Figure 2). The metropolitan area includes every regional unit except the islands and the majority of the population resides in Central Athens.

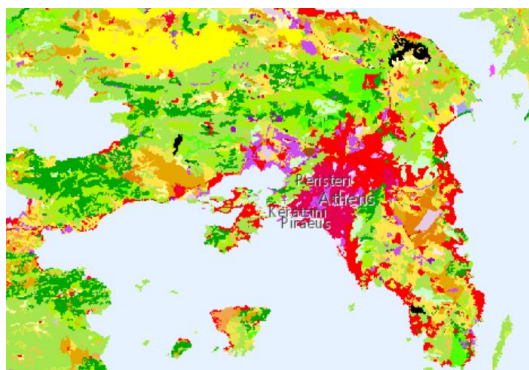


Figure 1: Corine Land Cover (CLC) 2018 <https://land.copernicus.eu/>



Figure 2: Attica Regional Units (Fameli, Kyriaki Assimakopoulos, 2019)

The region is endowed with significant natural and cultural heritage and has become a special attraction for international tourism with more than 6,3 million visitors in 2019 (World Data, 2019). The major touristic spots of Attica are mainly located in central-south Athens along with some parts of East Attica. However, conventional tourism has highly affected the city as well as all touristic areas of Greece environmentally which has driven policymakers to take some measures. More specifically, the application of the ISO (International Organization for Standardization) 14000 standard (most known framework that supports public and private organizations to improve their environmental management system)(ISO, 2009) along with Eco-Management and Audit Scheme (EMAS) (instrument established by European Commission in order to evaluate and improve companies' environmental efficiency)(European Communities, 2011)to Greek Hotels was a step forward towards addressing climate change but, in general, environmental objectives are not high on the Greek tourism's industry agenda regardless of the numerous complaints from travelers (Drakopoulou, 2020). Greece's existing ecotourism activities are situated outside Athens metropolitan area, even though the city's outskirts provide affluent natural and cultural heritage. Especially, East Attica has many sites which have been registered in Natura 2000 (Schinias – Marathon National Park and Wetland, Vravrona and the Coastal Marine Zone, Sounio – Patroclus Islet, Vouliagmeni Lake, Mount Parnitha) (Attica, 2022), which with sufficient planning and management can transform the regional unit into an ideal "urban" ecotourism destination.

1.2 Problem Statement

Athens metropolitan area as well as the rest of the country's tourism industry heavily relies on the so-called "Sea and Sun" which cannot contribute to sustainable development as it is characterized and driven by the concept of mass tourism (Cheirchanteri, 2019). The World Conference on Sustainable Tourism highlights the importance of building a tourism industry which will promote sustainable development pillars: economic feasibility, protection of the environment and social cohesion (Cheirchanteri, 2019). Recently, the Greek tourism minister, Vasilis Kikilias, appeared in favor of alternative types of tourism in Attica as he stated that "Athens and Attica have great potential to evolve into sustainable tourism destinations linking culture with travel and high-quality hospitality" (Greek Travel Pages: Greece's Latest Tourism Industry news, 2022). In addition, farmers tend to choose jobs in other sectors or moving to the province as the agricultural sector of the region is usually affected by economic

fluctuations. It is plausible to expect that, as unemployment is further increased in the region, ecotourism entrepreneurship in the rural and semiurban areas of East Attica could provide alternative jobs in the agricultural-tourism sector for the locals (Çetinkaya et al., 2018).

Athens is highly dependent on mass tourism (around 80%), one of the highest mass tourism percentages in the world, which significantly hinders—at least at the regional scale, the binding obligations set by the Kyoto Protocol on developed nations to reduce GHG emissions (Pieri et al., 2014). Especially in central Athens the tourist flow is much higher than in the other parts of region and therefore the energy consumption related to the industry (hotels, restaurants, tourist vehicles) is enormous (Pieri et al., 2014). More specifically, in Athens centre the Tourist Carbon Footprint (TCF), which measures the CO₂ tourist emissions, was 380511.64 per hotel in one year (Pieri et al., 2014). If we multiply the total number of hotels in Central Athens (226 in 2013) with this number we will get 84854095.72 kg of CO₂ and if we further take into account that in 2020 the number of hotels in central Athens increased to 270, this number is 102738142.8 kg of CO₂, which is a massive footprint (Hellenic Chamber of Hotels, 2021). So, it is more than understandable that we have to find ways that can decongest the pressure from popular touristic areas (Central Athens, Islands) in which mass tourism causes multiple negative effects. This thesis explores whether sustainable tourism—more specifically, urban ecotourism—in East Attica can offer a solution to the problems rising from combined urbanization and unsustainable tourism models and decongest the massive touristic pressure from the central Athens while it can also mitigate some major issues that the regional unit is facing right now. In other words, urban ecotourism can tackle to some extent key problems of East Attica, namely: a) Illegal waste disposal b) illegal infrastructure development c) high unemployment rates d) lack of knowledge from the majority of regional unit's residents towards environmental issues (Karytsas et al., 2019).

1.3 The Policy Context of Greek Ecotourism

Sustainable tourism requires that the basic tourism action plans, policies, and regulations are accessible to the society. Nonetheless, mass tourism's negative impacts have to be avoided through established objectives which will focus on protection of the natural and cultural heritage of the site and improvement of local people's living standards (Cetin & Sevik, 2016). Moreover, when promoting an ecotourism policy, it is essential that the special characteristics of the area should be accounted for and protected via the involvement of society, policy makers, as well as institutions and organizations in order to guarantee the sustainability of the project in the long run (Cetin & Sevik, 2016). More specifically, developing an ecotourism policy strategy in both national and regional levels while distinguishing a specific packet of

policies in the applicable area would support the achievement of ecotourism cornerstones. For instance, a policy towards ecotourism might include strategies and measures which would provide: a) eco-friendly transportation (therefore minimizing air and noise pollution), b) adopting materials used in ecotourism facilities and infrastructure that would cause the least environmental impact, c) utilizing renewable energy for the majority of the ecotourism services (Cetin & Sevik, 2016) in accordance with the set of regulations that would be implemented.

It has been claimed that sometimes ecotourism activities worldwide do not follow sustainability principles but, on the contrary, have faced critics for no long-term commitment to either local residents or environmental conservation (Rathore et al., 2008). Various researchers have reported businesses which are labeled under the umbrella of ecotourism but are greenwashing their product, which causes heavy skepticism on ecotourism projects and therefore creates distrust and suspicion amongst the locals (Rathore et al., 2008). As a result, in East Attica the selection of the right policies would advocate the minimization of such malpractices and would promote an ecotourism which would follow the sustainability pillars.

In Greece, the Ministry of Tourism is mainly responsible for policymaking in the industry as it sets regulations and standards, designs the strategic marketing plan, supports-control investments and inspects businesses of the sector (OECD, 2022). Management of one of the most significant pillars of the Greek economy is executed by the cooperation of the ministry of tourism along with other tourism bodies (Association of Greek Tourism Enterprises, Research Institute for Tourism, Greek National Tourism Organization, Hellenic Chamber of Hotels), each with different responsibilities (OECD, 2022).

The following chart provides detailed information about the Greek tourism organizational structure.

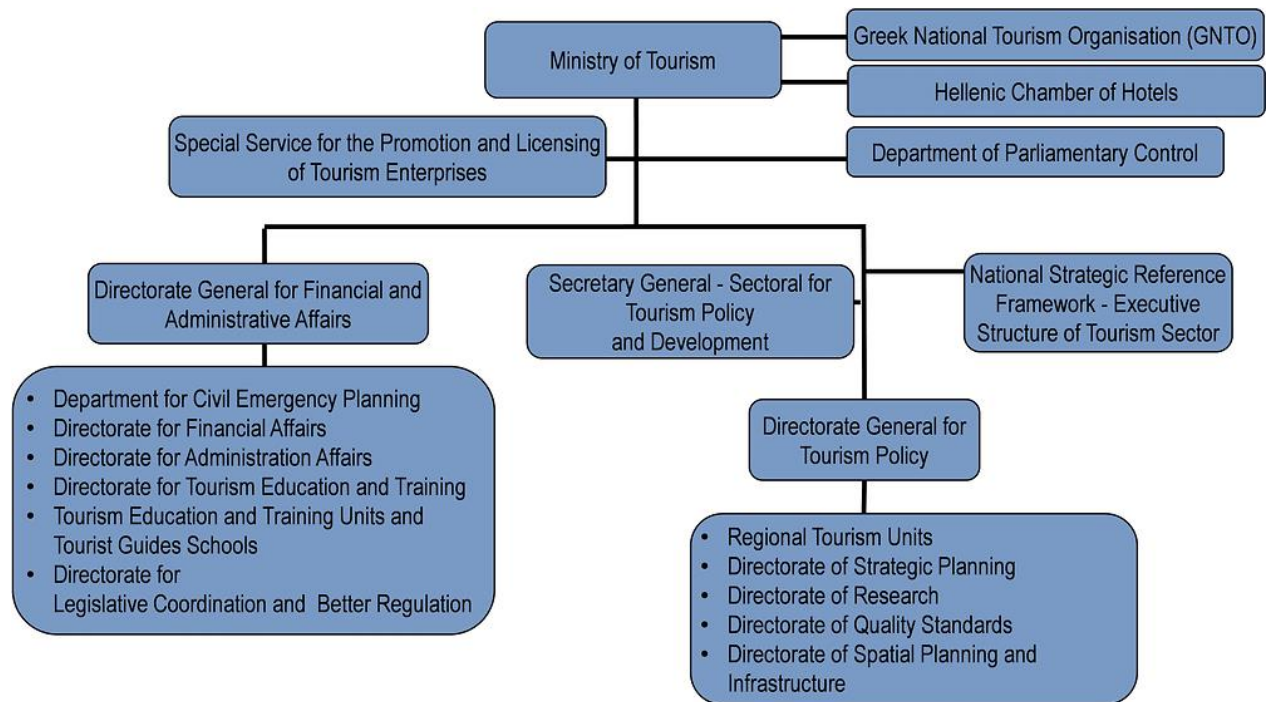


Figure 3: Derived from the Ministry of Tourism web page(<https://mintour.gov.gr/>)

The objectives (OECD, 2022) of Greece’s tourism strategy are highly linked to the United Nations Sustainable Development Goals (SDGs). As a result, the main pillars of the national strategy towards tourism are described as below:

a) Improvement of infrastructure and ease in an extent of the licensing regime in order to attract funds, Optimization of tourism spatial distribution (Decongestion of “busy” areas)
b) Focus on destination management in respect of sustainability principles
c) Improved Accessibility through the advancement of the road network.
d) Redesign the sector via innovative ways which would emphasize on economic, social and ecological resilience.

Table 1: Greek tourism objectives (OECD, 2022)

It could be claimed that a direct link between ecotourism and Greece is not observed at the moment, it could be forecasted that a new plan which would be related to sustainable tourism is high on the policy agenda. More specifically, according to Greek National Tourism Organization’s Tourism Marketing Plan, emergence of popular and new destinations will be introduced which will highlight new tourist attractions in order to cope with mass tourism effects (OECD, 2022).

In particular, the new strategy is planning to establish legislation that would advocate alternative ways of tourism which can decrease acute seasonality (OECD, 2022). Additionally, it facilitates Greece’s aims to introduce practical traineeships in the tourism sector and provide incentives to improve public and private sector cooperation towards sustainable tourism activities (OECD, 2022). East Attica could be one of these hidden “gems” as it was

mentioned before and as a result it can be a key factor in the transition to a more sustainable Tourism model.

1.4 Research Objectives

The main aim of this thesis is to investigate the potential sustainability effects of ecotourism in a semiurban regional unit. Along with the main goal, the thesis has the following secondary objectives:

Firstly, to identify possible sites for ecotourism activities within the regional unit of East Attica, as a means to define a reasonable and realistic geographical scope for the subsequent evaluations of ecotourism. Secondly, based on the identification of the study domain, to identify the potential economic, environmental and social impacts of ecotourism in East Attica. Thirdly, the identification of impacts will enable the assessment of the economic efficiency of ecotourism in the regional unit of East Attica. Fourthly, based on analysis of economic efficiency, to develop recommendations that ensure the feasibility of future ecotourism activities as a sustainable development regional strategy.

1.5 Research Question

The research objectives outlined in Section [1.4](#) will be accomplished by answering the following research question:

What is the potential of ecotourism activities in East Attica, as a sustainable regional development policy, to increase the economic welfare of the region when considering its socioeconomic and ecological benefits and costs?

This is a composite question, which involves understanding the geographical scope of ecotourism in the region, a systematic listing of its socioeconomic and ecological costs and benefits from both a private and public perspective, and an investigation of the economic efficiency implications (and their temporal trajectory and sensitivity to macro-fluctuations) in the context of regional sustainable development policy. In other words, the main research question concerns with the finding out the actual potentiality of ecotourism activities in East Attica. The main question will be answered by the following steps. Identifying potential ecotourist spots within the regional unit with an analysis to evaluate the costs and benefits of the activities that uncover the opportunities and giving a clear picture to the readers concerning the potential of ecotourism in the regional unit.

The thesis is therefore exploring the hypothesis that ecotourism activities at certain locations in East Attica represent an economically efficient alternative to the status quo. As discussed

further in section 2.1 if the welfare increase potential of ecotourism is demonstrated, along with a sufficient balance of private and public costs and benefits, this is assumed to lead to wider acceptance and adoption of ecotourism in society.

1.6 Motivations

This thesis intends to illustrate that sustainable tourism-ecotourism can be a main route leading to sustainable development in a semi-urban area. Especially, in Greece, the tourism industry is a major contributor of the country's gross domestic product but also with rather stark environmental setbacks, thus a balance between a profitable industry and sustainability led the author to choose this specific topic. Additionally, the potential of ecotourism to be applied and be feasible in terms of both economic and socioecological sustainability is worth exploring. As it is explained below in the research unit section, East Attica was selected because it is an untapped yet particularly promising regional unit in which ecotourism can not only thrive but also change the living standards of the area, offering a sustainable approach to the tourism sector.

The ultimate objective after doing this research would be demonstrating to the main stakeholders-actors of Attica (Governors, Policy Makers, Entrepreneurs, Society etc.) that ecotourism is not a utopia but an applicable model which can offer profits and also contribute to a "greener" future. More specifically, this thesis might highlight the significant opportunities of ecotourism in a challenging regional unit like East Attica, while also providing ideas which might be helpful in solving major sustainability issues from which Attica suffers in the last thirty years.

1.7 Thesis Outline

This paper is organized as follows: The first chapter has provided the study's background with a review of how ecotourism is currently framed in the literature, along with the problem statement, research objectives, motivations, and questions. The second chapter focuses on the theoretical framework, research framework, research strategy, research unit, research limitations and a brief introduction on quantitative and qualitative analysis. The third chapter goes into the methods which are used in order to gather the results which are demonstrated in chapter 4. Discussion of the results is conducted in chapter 5, while chapter 6 provides the conclusions and recommendations of this thesis.

2. Research Approach

2.1 Theoretical Framework

The theoretical framework of this proposal is based on three theories: social exchange theory (SET), welfare economics and social entrepreneurship.

SET's main claim is that individuals will trade their efforts in the present for promising results in the future (Haar, 2006). In other words, SET identifies that in every social and economic exchange the participants are expecting at least a justification of their efforts (Lenao & Basupi, 2016). More specifically, if the total social-economic cost is more than the profit they will stop participating in the exchange (Lenao & Basupi, 2016). This theory has been implemented in various cases of tourism development in order to examine the outcomes and behaviors which most of the times are characterized as positive (Chen & Chen, 2010).

Adopting a SET angle to ecotourism, we can reasonably assume that the residents of East Attica, will have a positive view of ecotourism development only if they are assured that life quality in their community will be improved in the long-term by ecotourism investments. As per SET, locals are more prone to support sustainable tourism development if they see the benefit of tourism development as beyond the development costs, in either monetary terms or negative impacts (Wang & Chen, 2015). East Attica society is the key factor in order to successfully achieve sustainable tourism development so it is more than necessary that stakeholders will take into account society's opinion (Karytsas et al., 2019). In other words, a positive relationship between residents and stakeholders in terms of economic, social and economic needs will optimize sustainable tourism implementation (Karytsas et al., 2019). To summarize, SET offers a useful theoretical framework that can illustrate how a local's behavior towards ecotourism can change based on the anticipated outcomes for the regional unit (Karytsas et al., 2019), which is of considerable value for sustainable urban and regional development policy. Welfare economics is utilized as a highly complementary to SET framework to understand and systematize the balance between the various types of ecotourism's benefits and costs from a temporal perspective. In this thesis, SET is seen as providing the social perspectives, while welfare economics as operationalizing the economic utility perspectives inherent in SET.

Welfare economics is a branch of public policy economics, and it refers to the formulation of recommendations which can be used in policymaking in order to guide improvements in the living standards of society as a whole (Backhouse et al., 2020). Welfare economics is closely

related to the concept of Pareto efficiency which, if we take it from an economic perspective, dictates that a policy intervention will be optimal when the marginal social cost (MSC) is equal to the marginal social benefit (MSB) of its improvement (Meng et al., 2009). In other words, if the MSC exceeds the MSB we will have to cease producing a certain “product” (in policy terms: seek another set of public policies) as the current “product” (or set of policies) does not represent the most efficient use of resources, or in other words it does not increase economic welfare given the investment. We have to take into account that MSC is not referring only to economic costs but also to social and environmental costs. More specifically, in the case of this thesis, equalization between MSC and MSB is a key factor of sustainable tourism as the overuse of touristic “products” will lead to unsustainable tourism, so the only solution is to eliminate the externalities in order to balance the relationship between social cost and benefit (Meng et al., 2009).

In economics negative externalities are adverse effects that occur from decisions that have a big impact on people not directly involved in the transactions. The main problem of negative externalities is that usually they are not considered in the “product” provision and pricing (Helbling, 2010). For instance, a conventional tourism hotel which invests and decides based only on the direct cost of and profit opportunity and does not consider the indirect costs to those harmed by the negative impacts of its use is an example of a negative externality. Most of the times this leads to an increased social cost which exceeds private costs (Helbling, 2010). With regards to sustainability, negative externalities can not only affect the present but also future generations. Only if externalities are eliminated or taken into account (internalized) into the provision of a product or public policy, sustainability can increase and social welfare will be achieved (Bithas, 2011). According to researchers, welfare economics and the corresponding guidance economic and environmental policies propose that minimization of externalities could be a condition for maximizing socioeconomic welfare (Bithas, 2011).

The tourism industry’s negative externalities in Attica, which have to be addressed in order to ensure increases in economic welfare, can include the following: congestion, noise, pollution, CO₂ emissions, overbuilding degradation of nature, rise in water consumption, crime rate and damage to nature and cultural environment (Prandano, 2014). Elimination or minimization of externalities in this case means the cooperation of stakeholders of Attica’s tourism industry towards a more sustainable use of tourism resources which will lead to ecotourism (Meng et al., 2009). So, if the stakeholders promote East Attica as an alternative ecotourism destination, they will not only minimize the negative effects of the “extensive use of tourism” which can

be translated to mass tourism, but they can maximize economic, social and ecological benefits if they engage the local society of the regional unit.

Social entrepreneurship is a term that gains increasing popularity during the last years as it is a subject of numerous professional and academic meetings while on the same time many companies are trying to adopt the term for their practices (Peredo & McLean, 2006). A social entrepreneur is someone who “runs” a project which features social goals with a core aim of bringing community services and doing social good while on the same time is maximizing profit without neglecting the basic goal (Peredo & McLean, 2006). The main characteristics of a social entrepreneur are: a) balancing the interests of multiple stakeholders without losing the core mission value b) recognizing opportunities which contain high social values and therefore successfully delivering them (Dees, 2001). It can be said that profit generation is not that important for a social entrepreneur especially when compared to a conventional one but being an economic efficient business ensures the future existence and therefore would advocate the accomplishment of the social purposes-missions that the entrepreneur has been set in the long term.

Although the public sector can provide funds and aid through programs (Life, Leader+,etc.) along with a supportive institutional framework the large majority of the ecotourism projects will mostly be developed by the private sector as the majority of Greek tourism projects(EOT, 2010). It was previously mentioned that ecotourism is a sensitive subject which can hide many threats (Greenwash, over tourism effect) if not applied in a sustainable way. As a result, social entrepreneurship is required in order to fulfill ecotourism economic, social and ecological potential because most of the time it creates a positive social impact through a sustainable business model (Situmorang & Mirzanti, 2012). More specifically, social entrepreneurs differ from the conventional ones, obviously they are aware and target on generating profit, yet profit is not their end goal as their ultimate aim is social welfare (Situmorang & Mirzanti, 2012). The fact that ecotourism main pillars (economic, social and ecologic welfare) and its emphasis on local community participation-education in the activities shows a strong connection between social entrepreneurship and ecotourism in specific areas like East Attica (Ahmad & Silverina, 2014). Therefore, sustainable entrepreneurs are required and need to be supported from the public sector as they can guarantee in some extent the application of ecotourism in a sustainable way (Piñeiro-Chousa et al., 2021).

SET and welfare economics are linked as both require public acceptance in order to support ecotourism activities. In other words, only if the community views positive socioeconomic

effects in the future will advocate investments. In addition, social entrepreneurship as a definition supports and requires social engagement it will affect the local opinion positively. To be more specific, East Attica's residents would have another viewpoint if the entrepreneur or enterprise which would invest on ecotourism activities prioritize social welfare. Furthermore, as ecotourism is also an economic activity, prioritization of public good would lead towards welfare economics' aim of increased economic welfare at the societal level. To sum up, the combination between both social-economic advantages is the turning point in the average person for any kind of new activities. So, social entrepreneurship can be the starting point as it includes welfare economics principles and through this social acceptance and involvement can be achieved because without social acceptance and participation is nearly impossible to be effective.

In summary, if the economic efficiency of ecotourism is demonstrated, especially if a sound distribution of private and public costs and benefits is demonstrated, SET and social entrepreneurship theory argue that this mostly private-led strategy can pick up speed in East Attica, achieving wider sustainability benefits.

2.2 Research Framework

This proposal adopts a research framework according to Verschuren and Doorewaard's standards which they describe it as "a schematic representation of a combination between the key parts of the research analysis which can make the research objective achievable" (Verschuren & Doorewaard, 2010).

The author divided the framework in the following parts:

Research Target: The basic goal of this research is to show the ecotourism opportunities in East Attica.

Research Methods: The author gathered data through Literature Review, desk research and an economic model which could show the potential socioeconomic benefits of ecotourism activities in the regional unit.

Data Sources-Analysis: For the qualitative analysis, the necessary literature was derived from scientific papers, reports, and books while grey literature was used as a secondary source. Scopus, Web of Science and Google Scholar were mainly used for the scientific articles. For the quantitative analysis, the author gathered data from Greek governmental Sources (mainly the Greek Statistical Authority, the Ministry of Finance, the Ministry of Tourism) and European Union's databases (mainly EUROSTAT and Copernicus).

2.3 Research Unit

East Attica has been selected as the research unit of this proposal. The researcher divided parts of Northeast Attica which are mainly mountainous and parts of Southeast Attica which are located near seashores. The reason behind the selection of this regional unit is that it contains ideal sightseeing for ecotourism purposes. In addition, the author comes from this region and has “in life” knowledge about the socioeconomic and environmental challenges that the area has and as a result it will be easier for him to identify the key objectives and drivers and conduct interviews which can give a clearer image to the reader about the current and future situation of the unit from a sustainable tourism perspective. Further explanations regarding the selection of East would be given during suitability analysis.

2.4 Research Limitations

This proposal has the following limitations. First of all, it is the first paper referring to ecotourism in East Attica, so the researcher had to find innovative ways and combine desk research and models as well as relying on his own experiences in order to achieve the desired results. The non-existence of similar case studies in Attica might become a barrier for this thesis. Secondly, finding data for the cost benefit analysis (see section [3.1](#)) is another barrier which was overpassed after conducting extensive desk research of similar cases and combining them with existing quantitative datasets as described in section [2.2](#). Thirdly, the tight schedule and the strict deadlines had to be followed, so gathering the necessary data during this time and providing argumentations for the selections was another difficult task.

2.5 Ethics Statement

This thesis was written without any commercial or financial relationships that would affect researcher’s objectivity. The data collection and information which advocate on the construction and monetization of the cost and benefits were achieved through extensive desk research that included: reports, scientific articles, governmental sources and in general publicly available publications. The research complies with the Ethics requirements set by Faculty of Behavioral, Management, and Social Sciences of the University of Twente. Interviews or surveys were not conducted and as a result ethical aspect related to individuals cannot arise.

3.Methods

3.1 Cost-Benefit Analysis

Cost-benefit analysis (CBA) is employed as an operationalization of the theoretical framework outlined in Section [2.1](#). A suitability analysis (see Section [3.2](#)) was conducted to provide scope and boundaries to the CBA, while an ex-ante policy assessment mentality (see Section [1.3](#)) was employed to interpret the CBA results from the viewpoint of SET and social entrepreneurship theory, providing recommendations about ecotourism as a regional sustainability approach.

3.1.1 Theoretical Background

It is undeniable that there cannot be any tourism industry without the implementation of specific projects. For instance, development of attractions, accommodation along with hiring of various individuals who are related to tourism industry involves considerable investments. A tourism project as any other project has two viewpoints (micro, macro). The first one focuses on the investor's costs and benefits that can be measured in monetary terms (Investment costs, profit etc.) while the second one takes into account a variety of costs and benefits which are not immediately obvious and need deeper research (for instance, social benefits-costs, environmental impacts) (Vanhove, 2010). Especially in the tourism sector we tend to forget the costs of negative externalities, such as pollution, noise, traffic congestion, destruction of landscape which most of the times are "paid" by a third party (local society) (Vanhove, 2013). A possible way to evaluate those effects is through cost-benefit analysis (CBA). CBA is a method that operationalizes welfare economics and which can assess the desirability of projects at the micro and macro level as it implies the enumeration and evaluation of all relevant costs and benefits. In particular, one of the main goals a CBA is to complete the private economic calculations with figures for the economic benefits and costs of a project which would advocate the policy makers and the society to choose whether they should proceed a project or not. In other words, CBA can support social decision making towards a project.

In general, as it was previously discussed most research papers related to ecotourism refer to the economic benefits that it can produce while on the same time supporting sustainability principals. However, the lack of an in-depth quantitative research into the economic effects of ecotourism is the main reason why most of the scientific papers cannot outline completely adequately the potential benefits and costs of ecotourism (Caldicott & Fuller, 2005). In other words, according to (Taylor et al., 2003) 'a few economists have assessed ecotourism's

potential for generating income, but economic research into ecotourism's impacts and its potential for creating conservation incentives is sparse'. In this research a cost-benefit analysis is applied in order to show the potential costs and benefits of ecotourism activities in East Attica. CBA is one of the most known tools regarding social welfare and environmental projects (Mishan & Quah, 2005) and therefore it might be the optimal quantitative analysis model for this specific case. Cost-benefit analysis is the examination of a decision in terms of its costs and profits or in other words between consequences and benefits of the implementation of ecotourism in an area (Drèze & Stern, 1987).

Although CBA has been characterized by many as a reliable tool, it is also a partial equilibrium method so it can contain some weaknesses (Vanhove, 2013). More specifically, it has been said by some that CBA is not able to evaluate clearly the social, cultural, geological factors and the complexities of ecological systems as it is a technocratic tool which focuses more on economic efficiency (Vanhove, 2013). However, even though CBA evaluates the economic efficiency of a project, which is necessary, it also considers the costs and benefits to society. For instance, if a policy has positive net benefits, then it is a big chance that it will make at least one person better off without making anyone else worse off (Vanhove, 2013). Welfare economics and SET are linked with CBA as when we are talking about a project related to tourism industry (ecotourism) at a local scale (East Attica), profit is necessary. If a project is predicted to be profitable after also accounting for its social and environmental sustainability effects, then social acceptance is easier to be achieved. Summarizing, construction of a policy through CBA requires a fusion between a purely economic focus on a project's economic efficiency and a public policy perspective that will take into account wider social values. This thesis is therefore implementing a social cost-benefit analysis that takes into account a wider set of social, economic, and environmental costs and benefits, from an economic perspective. Some of the more intangible items of these costs and benefits might not be possible to monetize (Vanhove, 2010), but even so the fact of being incorporated in the some of the stages of a social CBA can raise awareness among policymakers and the public about less-studied intangible effects.

This thesis used CBA to calculate and compare the environmental and socioeconomic costs and benefits of investing on ecotourism activities in East Attica. According to (Robinson et al., 2019) costs in CBA refer labor, infrastructure, materials, and capital used to implement and operate the policy (real resource expenditures) or in other words in policy inputs while benefits refer to policy outputs and include the outcomes after its implementation (Robinson et al., 2019). In addition, discount rate is essential for the application of CBA. Various experts

have agreed that policies related to sustainability should have lower discount rates and as a result a discount rate of 5% is most of the times recommended (Mayrhofer & Cortes, 2019). In this paper this rate amount will be adopted as ecotourism in East Attica is of low risk as it is estimated to have Low cost, high social and economic profit. In addition, the time plan assumed for the ecotourism project is 10 years. It is therefore assumed that a 10-year period is long enough to highlight all the outcomes of ecotourism activity in East Attica including significant economic and social benefits to the regional unit and its residents (Lao et al., 2015). In short, if ecotourism benefits in East Attica exceed the costs, then CBA will give the green light for the implementation of the project as according to its theory it will be successful (Tolpin, 1988).

CBA does not only contain potential costs, benefits, and their discount rate but also other tools which could determine the economic efficiency and viability of a project: 1. Benefit Cost Ratio (BCR) 2. Discounting factor (W) 3. Net Present Value (NPV) 4. Internal rate of return (IRR) 5. Sensitivity analysis (PAHO, 2019).

BCR is a profitability indicator which determines the feasibility of a project. It compares the present value of benefits to the present value of all costs (CFI, 2022) following this mathematical equation (PAHO, 2019):

$$BCR = \frac{\frac{TB}{(1+r)^t}}{\frac{TC}{(1+r)^t}}$$

Where: TB = Ecotourism benefit in year t where t = 0 to n years; TC = ecotourism costs in year t, where t = 0 to n years; n = the total number of years for the project duration or life span; and r = the discount rate (PAHO, 2019). In simple words, the above formula calculates the discounted cash inflows divided by the discounted cash outflows (CFI, 2022). Result ratio determines the “attractiveness” of a project. More specifically, BCR<1 implies that ecotourism project in East Attica, should not be undertaken, while BCR>1 means the opposite as the project will generate incremental value (CFI, 2022).

Money value differs over time and in the future it will have a lower weight than today For instance, 1 euro in the future will not be able to buy the same value of goods as it does today because of capital opportunity costs, price for uncertainties and risks, rate of time preference,

etcetera(Boardman et al., 2006).Discounting factor(W) makes potential future costs and benefit comparable as it discounts them back to their present value (CFI, 2022). There are two methods of discounting and determining the W, Exponential and hyperbolic discounting. This paper has chosen to use the first method as the timeframe(10years) is limited for the latter method as according to (Boardman et al., 2006) “Whyp places less weight on the near future than Wexp and greater weight on the more distant future”(Boardman et al., 2006).Wexp is expressed through this formula: $Wexp = \frac{1}{(1+r)^t}$

.The discounting factor is significant for the evaluation of the NPV. More specifically, NPV is the difference between the present value of benefits and costs, and it is illustrated in numbers by the following formula (CFI, 2022).

$$NPV = \frac{TB-TC}{(1+r)^t}$$

As per decision, if NPV>0 then a green light should be given to a project whilst if it does not exceed zero it should be rejected (PAHO, 2019)

IRR is the annual earning rate of a project and it occurs when present value benefits=present value costs or in other words NPV=0(Nas, 2006). It could be said that the IRR is the minimum discount rate at which ecotourism activities in East Attica would be viable (Mayrhofer & Cortes, 2019).

Last but not least, sensitivity analysis is essential for the investigation of a project’s robustness as it points out the most significant variables which could affect the outcomes (Mayrhofer & Cortes, 2019). Randomizing variables is a well-known method as it can give us extreme results (best case scenario, worst case scenario). For instance, applying changes in discount rates would show a negative or positive impact (depending on the number) on the NPV and through them the final results would seem more stable (Mayrhofer & Cortes, 2019).

This research analyses the costs and benefits of a small-scale ecotourism project within a regional unit. Its outcomes in a short period of 5-10 years might encourage Greek policymakers to invest on a more holistic strategic plan towards ecotourism. Table 2 illustrates the main costs and benefits that will be taken into account for this research which will be further analyzed and monetized in the results section.

COSTS	BENEFITS
Start-up expenses (acquisition of land, establishment of protected areas, infrastructure)	Generate revenue and employment
On-going expenses (maintenance of infrastructure, marketing, salaries)	Fosters community well-being through economic benefits and local participation
	Ecological Benefits (volunteering, decongestion of Athens mass tourism, promotion of green technologies etc.)
	High multiplier effect (direct-indirect effects)

Table 2: Costs and Benefits

3.2 Suitability Analysis

Acquisition of land and construction of ecotourism facilities in East Attica is an essential parameter which would be taken into account in the CBA of this thesis. As a result, conduction of suitability analysis would unveil the most optional for ecotourism purposes regional unit's areas.

Suitability analysis is one of the most used methods of Geographic Information Systems (GIS) for planning and management as its main goal is to identify the most suitable spatial pattern based on the indicators of a specific activity (Malczewski, 2004). The analysis has been applied in various cases (e.g., Environmental Impact Assessment, Agriculture, spatial planning, selection of ideal sites for public or private activities etc.) (Kalogirou, 2002). In other words, suitability analysis is ideal for finding ideal locations for a specific activity as it takes into account not only land surface but also location, size, infrastructure and the relevant quality (Malczewski, 2004).

It was previously mentioned the affluent natural landscape that East Attica has. Suitability analysis can advocate the researcher to distinguish the most ideal areas among the regional unit in which ecotourism activities can be implemented. More specifically, the use of satellite pictures along with maps (Urbanization, Environmental interactive maps) can show the characteristics which make an area attractive for sustainable tourism purposes. The main goal of this analysis is to identify the most attractive destinations for different kind of ecotourism. East Attica can be divided into two areas: Northeast and Southeast Attica. The following satellite maps retrieved from Google Earth show the villages and towns that surround the north and south part of East Attica and all of them could be under certain circumstances optimal for ecotourism activities. More specifically, Northeast Attica could be more than sufficient for agrotourism and community development as it is surrounded by one of Greece's

highest mountains (Parnitha) and it contains multiple small farms and areas which can give a unique “village” vibe to a traveler who is searching for something more traditional while being only 30 kilometers from the center of a metropolis. On the other hand, Southeast Attica might be exceptional for small-sustainable eco resorts which could offer activities like: Kayaking, Swimming and Sailing as it is situated near seashores with exquisite natural environment. Both areas could be ideal for the so-called eco tours which not only raise awareness and support conservation but also include interesting as well as eco-friendly activities (Hiking, rock climbing, trekking, crafting).

To be more specific, rural towns and villages (illustrated in figure 4) such as Malakasa, Avlonas, Varnavas, Grammatiko, Marathonas, Oropos and Kapandriti have such an affluent natural environment as they are surrounded by mountains-hills (Parnitha, Mavrinora, Grammatiko etc.) and lakes (Beletsi, Marathon) are optional for mountainous activities. On the other hand, coastal villages-towns of East Attica represented in figure 5 (Sounio, Keratea, Artemida, Agia Marina etc.) as it was previously mentioned, are exceptional for water activities which makes East Attica a “Full season” ecotourism destination as it combines both mountain sea and history. East Attica’s cultural and historical heritage (Temple of Poseidon, Kotroni, Vravra) along with the variety of local products (olive oil, raisins, fruits and vegetables, pistachio nuts, Mesogea wine, honey etc.) could give an all-around experience to the ecotourist (Attica, 2022).

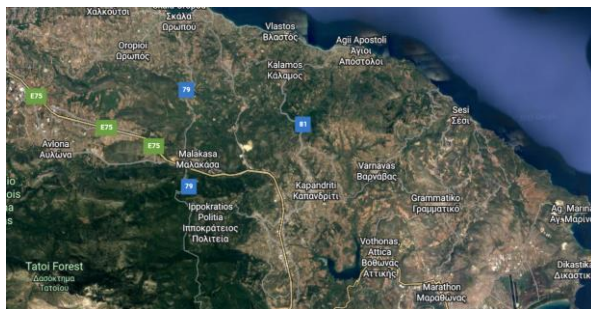


Figure 4: Northeast Attica (<https://earth.google.com/>)



Figure 5: Southeast Attica (<https://earth.google.com/>)



Figure 6: Athens urban area and East Attica (<https://earth.google.com/>)

The criteria summarizing the selection-suitability of East Attica’s areas as potential ecotourism destinations are illustrated below in table 3 while the researcher has evaluated each one of these criteria as weak (red)-medium (orange)-strong (green).

Climate (5,56 °C -33,3°C)	
Natural environment	
Historical and cultural heritage	

Existing Policy towards ecotourism	
Land Availability for ecotourism purposes	
Current tourism operation (leisure tourism)	
Accessibility (Road network, paths etc.)	
Local Goods & products	

Table 3: East Attica's areas selection criteria

4.Results

Cost benefit analysis has a specific structure which is formed by the following steps:

- 1. Specify** alternative projects
- 2. Decide** whose benefits and costs
- 3. Identify** impact categories, select indicators
- 4. Predict** the impacts over the project's lifetime
- 5. Monetize** (attach money value) to all impacts
- 6. Discount** benefits and costs to obtain Net Present Value of each alternative
- 7. Perform** sensitivity analysis
- 8. Make** policy recommendations

Table 4: CBA steps (Boardman et al., 2006)

This paper has distinguished two alternative plans, action towards ecotourism projects or non-action. The latter, implies that no action is taken and therefore the status-quo remains. In other words, non-policy intervention is applied and the potential costs and benefits of ecotourism activities in East Attica do not have any effect. On the other hand, policy intervention and thus action towards ecotourism indicates that future cost and benefits would occur and as a result their evaluation is needed in order to show the opportunities-outcomes of implementing those actions in the regional unit. Broader society, social entrepreneurs and public sector would be affected if the action alternative is selected as ecotourism provides multiple socioeconomic and ecological benefits along with specific costs which are needed for the project implementation. The identification, analysis and monetization of these effects will be elaborated in the following paragraphs.

4.1 Costs

4.1.1 Ecotourism Facilities

An ecotourism facility is defined as a facility that: Respects the land's natural condition, cultural and social values and its management forbids the development of facilities which would be inconsistent with ecotourism principals and would adversely affect land condition like: Tennis, Golf or sports arenas in general, casinos amusement parks etc. which could cause negative impacts in the area (Parks, 2020). In order to control how and to what extent will the

facilities contribute to the sustainability principles and how the facility supports land's conservation, governors and policy makers should assess on a case-by-case basis to ensure that the facilities meet the above characteristics (Parks, 2020). In addition, as in Greece the majority of tourism facilities are privately owned, future ecotourism infrastructures should show the ecological, social and economic benefits of its use to the local society. Consideration of the cooperation between public and private sector along with competing public interests is necessary for the evaluation of the net public benefit of this kind of facilities (Parks, 2020). The following table provides the basic criteria that could characterize a facility as optimal for ecotourism purposes.

Construction materials and building design that integrate positively with the selected area's natural landscape unique features (a design that fits in the natural environment) while mitigating negative ecological effects that conventional infrastructure contains.
As Efficient as possible usage of water and energy, utilization of "green" technologies that provide safe waste disposal of solid and use of renewable energy sources.
Optimization of waste management system (waste minimization and recycling strategies)
Local involvement in the eco-lodge advancement and a general goal of bringing economic and educational benefits to communities.
Educational focus on environmental awareness

Table 5: Ecotourism Facility basic characteristics. (Shams, 2006)

In East Attica, an ideal design of ecotourism facility could be a cottage design eco-lodge which would suit to the "character" of the regional unit villages and towns and could follow the criteria which were mentioned above. More specifically, high structure should be avoided as it might break the natural horizon line and absence of air-conditioning-minimization of lighting could be achieved through a design which would maximize passive ventilation. In addition, the construction materials should be eco-friendly while also being resilient so they can withstand the climate changes that occasionally affect East Attica (snowing, raining, winds). In other words, steel, cement, and heavy machinery have to stay away as much as possible from the construction process whereas sustainably harvested material should dominate the building procedure (Shams, 2006).

Before moving to the technical parts, it has been already mentioned that land in which the ecotourism activities would take place is 10,000 sq.meters. It is recommendable that the ecolodges should cover 20% of the total land while the other 80% will be used for agrotourism purposes and activities. This type of farm- Eco facilities could be situated in the midst of olive

trees, vineyards, orchards and fruit trees, vegetable gardens which would be organic and fertilizer-free. Most Greek tourist cottages used for ecotourism are around 50-100 sq.m so for this project it is suggested a distinction between ecolodges for two people (50sq.m) and for four people (100 sq.m). Also, a construction of a small greenhouse (100 sq.m) building out of polycarbonate where vegetation activities will be held (solely using local seeds) could be an interesting option. In total a plot of 10.000 sq.m which could be used for ecotourism purposed in East Attica would contain 20 two-person lodges, 10 four-person lodges.

The eco-lodge could be built on a local wood structure which should be certified from Forest Stewardship Council (FSC) to give a more local look while also being sustainable. Also, it should be designed to be comfortable, light and sunny and use of light smart light bulbs with time switches for energy saving is essential (Shams, 2006). Moreover, as Athens is the sunniest capital in Europe, photovoltaic applications could cover the normal energy needs while solar windows can be used for water heating (WWF, 2003). As extras, installation of a system of rainwater collection, filtration of wastewater through a reedbed system which could be reused for irrigation and a compost toilet which could minimize even more water consumption might be a good recommendation (WWF, 2003). To sum up, the cottage would be a fully eco choice and an alternative worth-living experience.

The estimated construction of wooden ecolodges is estimated at around 58,000\$ (54825.08 €) in average per room globally (IFC, 2004). As calculation of the exact price of eco facility construction in East Attica might vary (currency difference, material cost, years difference etc.) and in order to be more reliable a price range between (58000-62000) € has been set. So, the Eco facilities construction would cost in total 1.800.000 €. In addition, Attica tourism sector requires on average 0.49 staff per room (Receptionists, maid, manager, farmer etc.) (Beneki et al., 2016) and in most of the eco business in tourism industry the majority of the employees are locals (IFC, 2004). Furthermore, in Greece the average monthly salary in tourism sector is 1000 € and it depends on the work experience (POEET, 2021). As it was previously mentioned that the total number of ecolodges per ecotourism facility would be 30, the total number of employees would be 14,7 or 15 employees in total. As a result, the total labor expenses for an ecotourism facility in East Attica would be 180.000 € annually. As per other expenses even though the materials and equipment that would be used in the proposed facilities can be characterized as easy to maintain, an estimation of the total other expenses cost is not reliable as it depends on specific circumstances. As a result, in order to equalize other expenses, it has been decided to not include potential subsidies or fundings from programs like ESPA (Partnership Agreement for the Development Framework) which could

cover a percentage between 35-50% of the total investment for ecotourism projects (Official Government Gazette, 2022).

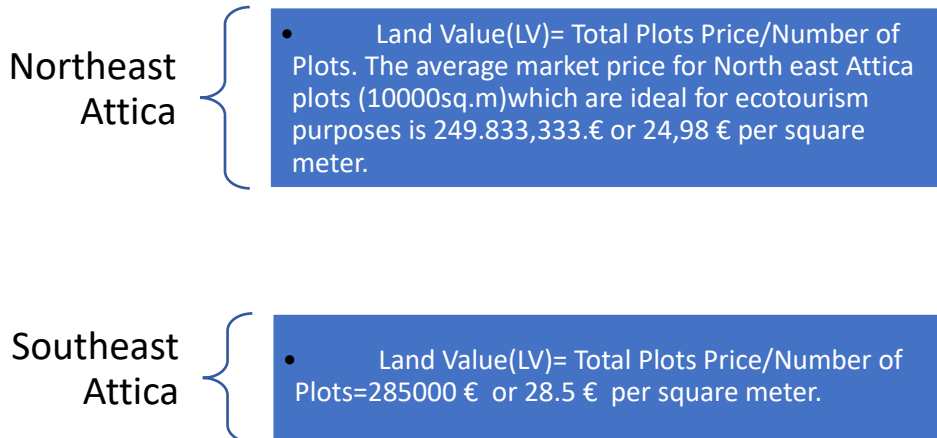
4.1.2 Land Market Value

As ecotourism is related to economic growth as well, identification of the real estate value in future spots in which ecotourism can take place is more than significant. Land Property value is affected by: a) Accessibility to public services, highways and public transport, b) Availability of green spaces or parks, c) Land availability d) Cultural Heritage and other characteristics (Wittowsky et al., 2020). In order to determine property value, Greece has established the Map of Real Estate Value Zones which provides country's real estate objective values (Ministry of Finance, 2021). This newly introduced "tool" provides an interactive map that can give useful information about East Attica's land value. As East Attica covers nearly 50% of the region the researcher has already distinguished some areas which could be ideal for ecotourism purposes in Northeast and Southeast parts of the regional unit. The researcher chose to calculate the values of plots which could be optional for agrotourism or ecotourism activities. However, these Maps of Real Estate Value Zones provide information about residential properties objective value. More specifically, the existing properties have to be transformed into ecotourism facilities which means increased economic and environmental costs (Demolition, Reconstruction, Property price) so it has been decided to stress the focus on plain plots which would be cheaper to acquire, and construction of eco-friendly facilities would be much easier. In particular, the plain plots that were considered for the estimation of land acquisition are unused for years and it can be claimed that ecotourism is providing an optimal alternative for their utilization. Determination of the land value of these areas have been evaluated through the most famous Greek real estate Website Xrysh Eykairia (Eykairia, 2022).

As Xrysh Eykairia contains hundreds of lands for sale in East Attica, it has been decided that the ideal land size for ecotourism purposes would be 10000 square meters. The reason behind this selection is that even though the regional unit contains various rural areas it is still part of Greater Athens so occupation of larger areas would affect region's spatial planning. Furthermore, in order to ease the research, extreme prices which do not correspond to reality were excluded from the final calculations. In addition, all the lands which were part of the research follow the criteria which are elaborated below. Price fluctuated from 68000 € to 600000 € while 38 plots were considered. The results for the two different areas are demonstrated in the following scheme.

Location: East Attica
Size:10,000 sq.m
Condition: Plain plots
Price: Below 1,000,000€(Prices excluding unreasonable outliers)
Reliability status: Published in Greece’s biggest real estate website

Table 6: Land Value calculation criteria



The price of Land in these two areas can be characterized reasonable as they are part of the Greater Athens area where all the necessary services are available in case of emergency: Hospitals, Embassies, Police etc. In addition, the majority of these lands have been unused for years so application of ecotourism activities will revive the real estate market of East Attica. An average price of 267,416.66 for 10000 sq.m is more than affordable compared to the current real estate market of Athens. More specifically, an average increase in properties price of around 10% have been observed in whole Attica compared to 2021 and according to experts Athenian Real estate market will continue to skyrocket in the following years (Kathimerini, 2022). A slight difference between Northeast and Southeast parts of the unit can be observed and it is also logical as Attica’s south suburbs, towns and villages real estate market was always more expensive compared to the north side as they are linked to the famous Athens “Riviera.”

4.2 Benefits

4.2.1 Economic and Social Benefits

Ecotourism has been credited for providing socioeconomic development in many cases and thus some of the economic and social are interrelated (Snyman, 2017) so a combination of social and economic benefits will be provided, as participation of the local community and area's economic advancement play a vital role in the fulfillment of the ecotourism principles, and it can be said that they are often attached.

Various experts claim that ecotourists seek for comfortable and mid-priced lodgings (Cheirchanteri, 2019). Accessibility, comfort, ecofriendly materials, small groups, good organization of activities and other characteristics are important for an ecotourist, but pricing is also playing a key role (IFC, 2004). It was previously mentioned that in order to avoid activating mass tourism effects, ecolodges would cover only 20% of the potential land area which would be used for ecotourism purposes. This implies that the number of ecotourists will be controlled and therefore it might be limited but with the high-quality infrastructure and facilities, visitors would be encouraged to stay longer (Lao et al., 2015).

In Attica, average occupancy rate was at 49 % in 2019 which means that region's hotels were nearly full half a year (Insete, 2021). It could be assumed that ecotourism facilities in East Attica will exceed this rate, as they could host in maximum only 80 people per facility and ecotourism is a fast-growing industry at the moment which attracts many travelers (Jegdić & Gradinac, 2016). However, for impartial reasons the rate mentioned above will be considered for the final evaluation of the project. In addition, after extensive research, it has been found that the average cost of overnight accommodation in Attica was 76 euros in 2019 per room (Insete, 2021). Since sustainable tourists, who would be the main visitors of East Attica are willing to pay more for a more sustainable tourist destination, it could be assumed that prices of 100 euros for 50 sq.m and 180 for 100 sq.m could be reasonable for this type of "green" travelers, if only ecotourism sector of the regional unit follows the requirements and recommendations which was mentioned above (Pulido-Fernández & López-Sánchez, 2016). So, as the proposed facility would have 10 100 sq.m and 20 50sq.m lodges the total business revenue per year is 635,040€ [average price (120€) *14,7(fullness per month) *30(number of rooms) *12(yearly)].

In a business that adopts welfare economics principles and aims at social welfare, it can be supported that economic benefits would lead to social benefits. More specifically, most of ecotourism businesses indicate that they place a high priority on employing members of the

local communities in the areas where they operate (IFC, 2004). This research also advocates the above statement, and it adds that the investment should be done by social entrepreneurs coming from the region. Such a policy would aim to ensure that ecotourism would be acceptable from the local community as it could be both socially and economically sustainable by providing an income for unemployed people who are experts in their field (eco guides, farmers), while also giving a job opportunity to some locals do more conventional jobs (receptionist, maid, manager) (Scheyvens, 2015). Even though in this paper is discussed a small-scale ecotourism enterprise and unemployment rates of the region will be slightly affected, the high multiplier benefits that sustainable tourism activities can have, might lead to even greater economic and social profits. For instance, ecotourism contribution to local economy does not only end to job offer creation but in addition, it can play a crucial role in the promotion of local products which would further boost the local economy (EOT, 2010). In short, ecotourism plays the role of not only providing job employment to specific categories, but it can also raise the standard of living of the local people as it can offer, improve or increase jobs like: handicraft producers, restaurant operators, traditional cultural dancers, musicians, logistics, product sellers, beekeeper, oenologists and many others who could be potential and significant actors of the industry (Ahmad & Silverina, 2014). The multiplier effect, indirect revenue and employment cannot be estimated but it can be assumed that it will be high as East Attica has a variety of local products which could attract many sustainable tourists. In other words, it can expand the market for local products and multiplies the socioeconomic benefits. It can also be assumed that ecotourism would address gender equities by involving women in key roles associated with its activities and the same could happen in East Attica a regional unit with dynamic female presence (51.8% of the total population) (Anup, 2016). To sum up, ecotourism activities in East Attica include the generation of employment, income, and a multiplier effect on the local economy and as a result it could be observed a wide social acceptance of the project as it would be established, managed and run by locals. The following figure is summarizing the socioeconomic benefits that might occur after the implementation of ecotourism activities in the regional unit.

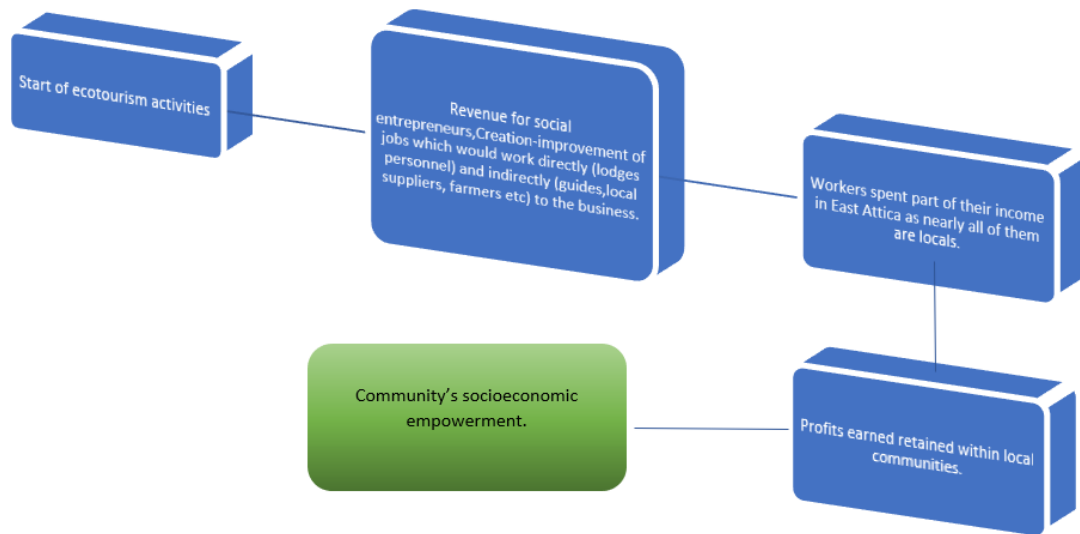


Figure 7: Steps of East Attica's socioeconomic empowerment

4.2.2 Ecological Benefits

Researchers applying CBA were struggling with environmental values as they were incommensurable and therefore monetization of these benefits was not seen as necessary (Greenhalgh et al., 2017). The problem of monetizing data related to environmental value is still relevant today as many experts are opposing to put a money value on “products” that are not part of an economic transaction system (Greenhalgh et al., 2017).

A way of approaching in monetary terms the environmental value of ecotourism in East Attica could be its impact on the regional unit's housing value. More specifically, green interventions like ecotourism activities in a r-urban area like East Attica can provide multiple benefits which could affect property prices (Bockarjova et al., 2020). As greening an area via implementation of ecotourism activities such as vegetation, forestation along with volunteering activities which are extremely popular among ecotourists (beach-public spaces cleaning) could upgrade an area's image reflecting to the property prices (Saeed & Mullahwaish, 2020). In detail, it is estimated that in some areas greening has led to a property price increase from 5 to 6% to 10–11% (Bockarjova et al., 2020). It is logical to say that as with everything in economy, real estate-housing market varies considerably from country to country and from area to area and as a result for East Attica's case the average of the two percentages should be taken into account (8%) in order to be more objective (Trojanek et al., 2018). So, assuming that an

increase of 8% could be logical, a comparison of the current objective housing values of the regional unit with the future ones (after the application of ecotourism) would show the exact effect of the interventions in quantified terms. For instance, in Artemida a coastal town of East Attica the objective value of a 163 sq.m house is calculated at 923 € per sq.m or 150,449 € according to the Greek ministry of finance (Ministry of Finance, 2022). Ecotourism could boost the property price by 8% as it was specified earlier which would lead to an increased price of 162,484.92 €. The total environmental “value” of ecotourism activities for this specific house is 12,035.92 €. As this paper is focusing on ecotourism activities in multiple areas of the regional unit, it would be more impartial if a “wider” calculation of the environmental value is conducted. More specifically, East Attica has a population density of 330/km² and in Greece the average household size is 2.6 people per house so it could be claimed that East Attica on average has 126.92 houses per km² (Hellenic Statistical Authority, 2014). In addition, the average property price per sq.m in East Attica is estimated at 983,33 (table 7) so an increase of 8% in the housing value because of ecotourism would create a new price of 1061.96 € sq.m for 126.92 houses. An assumption can be made that from year 1 to 4 after the implementation of the project, an annual price increase of 2 % would occur in properties located within 1 km distance from the ecotourism facilities and after the 4-year period the stabilized increase of 2% would stop. Therefore, the average benefit of greening an area in East Attica through ecotourism activities would be 78,63€ sq.m and the total “environmental” value per sq.m is 89,817.4764€ sq.m(78.63*126.92*9) for houses situated withing 1 km distance from the ecotourism projects. Finally, if we take into account that the average size of a Greek house is 103 sq.m (Demographia, 2022) the final total environmental benefit would be 9,255,906.27€ after the implementation of ecotourism activities in the regional unit which is demonstrated in depth from table 7. The final results will slightly differ as an annual 2% increase will be consider for 4 consecutive years while also discounting effects would affect the result, but the logic behind the calculations will remain the same.

The following table illustrates the average price per sq.m in the East Attica areas where according to previous suitability analysis would be ideal for ecotourism purposes.

Area	Price per sq.m	Price after ecotourism (sq.m)	Environmental value per area
Artemida	1025 € sq.m	1107€ sq.m	1,071,966.32€ (82*126.92*103)
Avlonas	1050€ sq.m	1134€ sq.m	1,098,111.84€ (84*126.92*103)
Varnavas	750€ sq.m	810€ sq.m	784,365.6€ (60*126.92*103)
Grammatiko	950€ sq.m	1026€ sq.m	993,529.76€ (76*126.92*103)

Kalamos	1025€ sq.m	1107€ sq.m	1,071,966.32€ (82*126.92*103)
Kapandriti	1000€ sq.m	1080€ sq.m	1,045,820.8€ (80*126.92*103)
Keratea	1200€ sq.m	1296€ sq.m	1,254,984.96€ (96*126.92*103)
Malakasa	875€ sq.m	945€ sq.m	915,093.2€ (70*126.92*103)
Marathonas	975€ sq.m	1053€ sq.m	1,019,675.28€ (78*126.92*103)
Average	983,33€ sq.m	1062€ sq.m	1,028,434,.03€ (78,67*126.92*103)
Total			9,255,906.27€

Table 7: Average-total prices and their increases via ecotourism.(Ministry of Finance, 2022)

An increase in properties located nearby ecotourism facilities as mentioned below could affect public sector as well. More specifically, Uniform Real Estate Property Tax (ENFIA) established in 2014 is levied on real estate properties that are located in Greece and belong to natural or legal persons or any kind of legal entities on 1 January of every year. ENFIA set its criteria on the location, area, use, age, floor and number of façades of the building and is imposed on natural and legal persons (GOV, 2022). As most of these characteristics are too detailed and some of them might be irrelevant for this research, the first two characteristics along with the average sq.m of houses in East Attica will be considered in order to evaluate the public benefits through taxes from the property prices increase. Previously, it was shown that the average price per sqm of an East Attica house is 983,33€ and application of Ecotourism activities would increase it to 1062€. Therefore based on the following table (8), it can be observed that properties situated nearby ecotourism facilities would move from zone c to zone d which in monetary terms means an basic tax increase of 0.8€(3.7-2.9). As a result, the basic tax increase for an average East Attica house (103 sq.m) would be 82.4€ per year (381.1-298.7) which is transformed into 94,123.872€ per year after multiplying East Attica potential ecotourism areas and the houses situated within 1km distance from the ecolodges.

Zone price (€/sqm)	Basic Tax (€/sqm)
A)0-500	2,0
B)501-750	2,8
C)751-1000	2,9

D)1001-1500	3,7
E)1501-2000	4,5
F)2001-2500	6,0
H)2501-3000	7,6
I)3001-3500	9,2
G)3501-4000	9,5
K)4001-4500	11,1
L)4501-5000	11,3
M)5001+	13,0

Table 8: Tax price per zone(sq.m)(Ministry of Finance, 2019)

It could be argued that the tax increases would affect East Attica residents and they could be part of indirect economic costs. However, the high rise of properties value could balance the tax increase as their real estate price could provide significant economic benefits if the owners of the properties decide to take advantage of them in the future. Moreover, as this chapter is discussing about the “ecological” value that ecotourism and greening activities in general can grant to the area, monetization of environmental benefits through economic advancements (greening a semi urban area like East Attica) is providing “profits” to individuals (household private benefits) as well as to the public sector. In particular, 94,123.872€ per year as an indirect “environmental” benefit could boost country’s fiscal revenue while also offering the multiple socioeconomic benefits which were discussed before. In short, it could be claimed that Ecotourism in East Attica can “produce” a small-scale sustainable economy model which could influence the rest of the country to focus on more sustainable way of thinking leading to innovative and more ecofriendly ideas and applications which could be equally or even more profitable to the conventional one’s for both sectors (public and private).

In the problem statement of this paper, it was discussed that one of the main issues of Attica’s tourism sector is the over tourism effect that is observed in Central Athens and the fact that hotels in the area rely heavily on conventional forms of energy which produce 102738142.8

kg of CO² emissions. Mass tourism decongestion cannot be achieved in full extent as the proposed policy regarding ecotourism is discussing about small scale ecolodges which would have the minimum environmental impact, but it can provide a good alternative choice for travelers who are searching for environmentally friendly vacations in a Metropolis. In particular, the recommended ecolodges technology, materials and energy are designed and aiming to be As Sustainable As Possible (ASAP). As it was stated before, a conventional hotel in Athens is producing 380,511.64 Co2 emissions but if ecofriendly technologies and practices are adopted (clean energy, solar panels, recycling products, rainwater treatment etc.) it can reduce its environmental footprint by 128,810 kg Co2 (Chiara, 2016) and it could be assumed that East Attica ecolodges would produce even less as they will follow the asap guideline which minimizes-eliminates negative environmental impacts(Shrivastava et al., 2020). According to Environmental Defense Fund (EDF) the estimated social-ecological cost of Co2 emissions is 47.49€ per ton (EDF, 2022). Eco friendly hotels-lodges can reduce Athenian hotel sector footprint by 128,810 kg by adopting asap strategies, so the environmental-social cost after the implementation of these strategies-application would be 11,953.73€ (251,701.64*0.04749€) per hotel while a conventional one's cost is 18,070,4978€ (380,511.64*0.04749€) so the environmental benefit of East Attica is the minimization or in other words saving of 6,116.76€ or 55,050.91€ for 9 ecolodges in the specified areas where ecotourism could be implemented. To conclude compared to conventional Athenian hotels, East Attica's newly introduced sustainable tourism enterprises can produce socioecological "profit" 55,050.91€ per year because of the minimization of CO 2 emissions. It is worthy mentioned that these ecolodges are more likely to produce far less emissions, but assumptions related to the exact number of the emissions cannot be made. The comparison between conventional and ecofriendly hotels emissions aimed to estimate the benefit in monetary terms that can thrive via the reduction of CO 2. In addition, potential decongestion of less ecofriendly hotels by sustainable tourists who would prefer totally sustainable ecolodges as the one's in East Attica can multiply the "environmental" benefit but due to impartiality only the current difference between conventional hotels and ecolodges would be taken into account during the CBA.

A potential benefit that might arise after the implementation of the project could be an influence of East Attica practices to the rest of Athens and finally an adoption of some of these techniques by conventional hotels which would drive to a transition to an eco-friendlier tourism industry and as a result advocating Greece comply with the global environmental rules. Public sector and especially the government should play a vital role towards this

transition as they could promote East Attica’s paradigm and therefore generate more environmental benefit as influencing tourism enterprises which are more than significant in Greece would also change the behavior of normal people might try to mimic the practices of country’s most profitable sector.

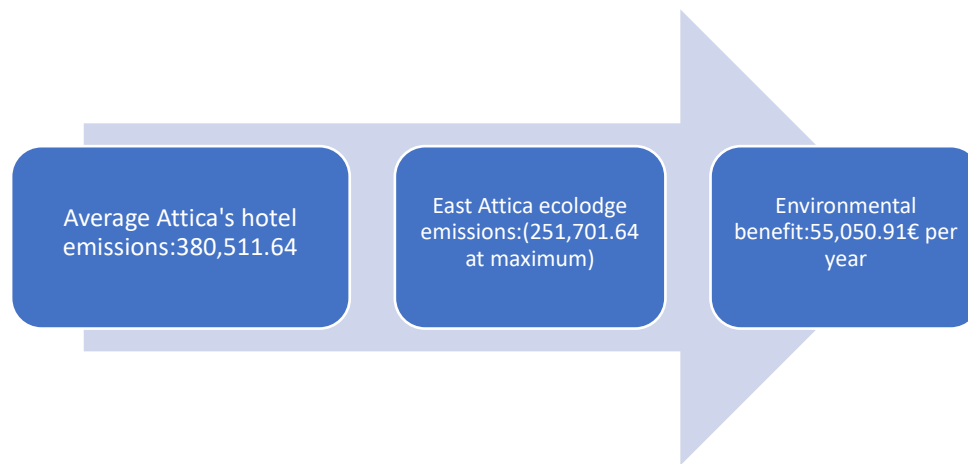


Figure 8: Comparison between conventional hotels and ecolodges emissions.

ITEM	COSTS	BENEFITS
Land Acquisition	267,416.666 € per area	
Facility Construction	1,800,000 € per area	
Labor	180,000€ per year, per area	
Revenue		635,040 € per year, per area
Properties “Green” Value		9,255,206.26€
Co2 reduction		55,050.91€ per year

Table 9: Monetization of main costs and benefits.

4.3 Discounting and Sensitivity Analysis

As it was described in section 3.1.1, 1 euro today does not have the same value in the future. As a result, a discount rate should be applied to any kind of research related to future economic benefits or costs. The formulas and the meaning of the CBA components were analyzed in chapter 3 while argumentation of the selection and the monetization of the basic costs and benefits of Ecotourism activities in East Attica was provided in sections 4.1 and 4.2 and it is necessary to say that appendices A and B summarize their calculations.

Exponential discounting formula was selected ($Wexp = \frac{1}{(1+r)^t}$) (see 3.1.1) and calculated a per year discounted factor (Wexp) which was multiplied by each year's cost and benefit gave their present value as it is demonstrated in table 10.

Year(t)	Costs	Benefits	Wexp	PV Costs	PV Benefits
0	18606750	0	1	18606750	0
1	1620000	8084281.586	0.9523810	1542857.1	7699315.797
2	1620000	8130559	0.9070295	1469387.8	7374656.689
3	1620000	8177761.962	0.8638376	1399416.9	7064258.254
4	1620000	8225908.983	0.822702475	1332778	6767475.677
5	1620000	5770410.91	0.783526166	1269312.4	4521267.939
6	1620000	5770410.91	0.746215397	1208868.9	4305969.466
7	1620000	5770410.91	0.71068133	1151303.8	4100923.301
8	1620000	5770410.91	0.676839362	1096479.8	3905641.239
9	1620000	5770410.9	0.644608916	1044266.4	3719658.316
10	1620000	5770410.9	0.613913254	994539.47	3542531.73

Table 10: Discounted costs and benefits

Through the addition of PV Costs and PV Benefit, NPV ($\frac{TB-TC}{(1+r)^t}$) and BCR ($\frac{\frac{TB}{(1+r)^t}}{\frac{TC}{(1+r)^t}}$) were evaluated. The final summaries of the present value of the two components are presented in figure 9 which illustrates the numerical difference between PVC and PVB within a 10-years period while the last columns(total) show the total difference from which NPV and BCR were derived.

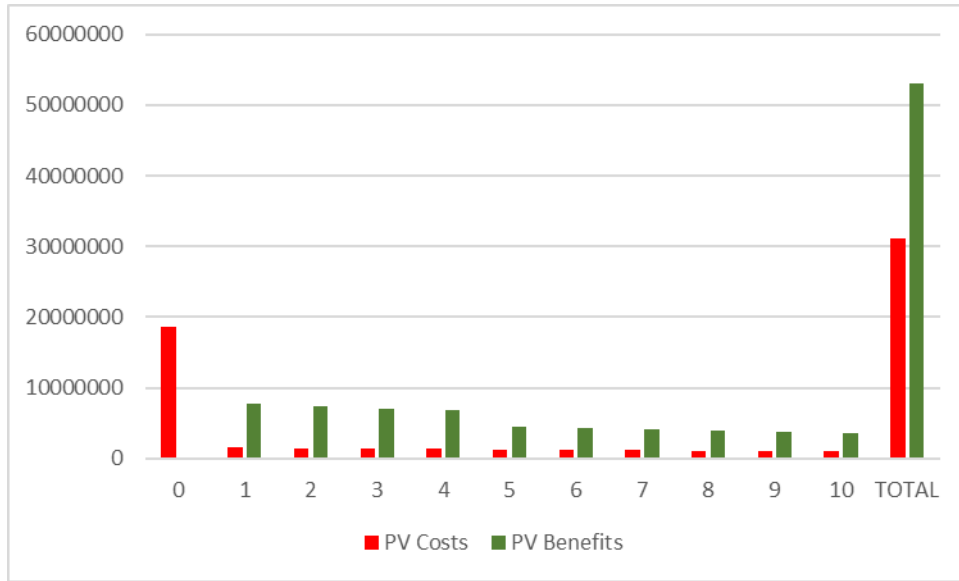


Figure 9: Chart Column Summary of PVC and PVB

The IRR of the project was estimated at 22% as it is illustrated in [Appendix C](#) and it could be claimed that it guarantees in some extent the socioeconomic successfulness of the ecotourism activities in East Attica. In particular, 22% is considered as a really high IRR which absolutely exceeds the recommended discount rate (5%) and therefore implies that the project looks profitable.

Sensitivity analysis was conducted in order to assess uncertainty surrounding the assumptions of the variables that were selected for the CBA. More specifically, two different discount rates were applied 7%, 9%. Finally, a third scenario was designed and assumed that the revenue was decreased by 9% while the discount rate remained 9% respectively. The main aim of the scenarios of sensitivity analysis is to analyze the economic potential investment of the project if the discount rate changes and therefore there is a greater risk regarding the investment. The results of the sensitivity analysis are illustrated in the tables (11, 12, 13). The most extreme scenario among these 3, the third one still shows that ecotourism is a project that should get the green light from the policy makers as its BCR and NPV are positive.

TPB	TPC	BCR
72878778.34	47244429.84	1.542589859
		NPV

44740282.02	29003355.48	15736926.55
-------------	-------------	-------------

Table 11: 1st scenario (9%)

TPB	TPC	BCR
79814856.22	49029527.41	1.627893648
		NPV
48998340.23	30099226.88	18899113.36

Table 12: 2nd scenario (7%)

TP	TPC	BCR
68661703.31	47244429.84	1.453329071
		NPV
42151419.66	29003355.48	13148064.19

Table 13: 3rd scenario (9% dr, 9% rvn. decrease)

In addition, exploration of different time horizons was conducted in order to evaluate the project in the long term. It was previously mentioned why other expenses and some maintenance costs were excluded from the final calculations (4.1.1) for the first 10 operational years of ecolodges. However, as a sensitivity analysis in a 20 years' time frame was applied, it was logical to take into account renovation-refurbishment costs that are usually necessary for every tourism facility after the first 10 years (Turner & Hesford, 2019). So, an average renovation-refurbishment cost of 5,193 € per room was considered for the final scenario of

sensitivity analysis (Turner & Hesford, 2019). The following table represents the analysis results which considers 20 years period with extra renovation costs in year 11 (1,402,110€) which was discounted during the analysis. A more graphic illustration of sensitivity analysis is demonstrated in figure 10 and shows that PVB still exceeds PVC and therefore a significant difference between them is maintained 20 years after the implementation of ecotourism activities in East Attica. The results of the sensitivity analysis do not demonstrate specific threats as even the less optimistic scenarios are in favor of the proposed project. Adding to that, the positive results of the examined scenarios indicate the feasibility and efficiency of ecotourism projects in the regional unit over a longer time horizon. Finally, the IRR in the long-term scenario was increased and it was estimated at 24% meaning that over the years the project is becoming more successful in socioeconomic and ecological terms.

Year(t)	Costs	Benefits	Wexp	PV Costs	PV Benefits
10	18606750	0	1	18606750	0
1	1620000	8084281,6	0,952381	1542857,14	7699315,797
2	1620000	8130559	0,907029	1469387,76	7374656,689
3	1620000	8177762	0,863838	1399416,91	7064258,254
4	1620000	8225909	0,822702	1332778,01	6767475,677
5	1620000	5770410,9	0,783526	1269312,39	4521267,939
6	1620000	5770410,9	0,746215	1208868,94	4305969,466
7	1620000	5770410,9	0,710681	1151303,75	4100923,301
8	1620000	5770410,9	0,676839	1096479,77	3905641,239
9	1620000	5770410,9	0,644609	1044266,44	3719658,316
10	1620000	5770410,9	0,613913	994539,471	3542531,73
11	3022110	5770410,9	0,584679	1766965,13	3373839,743
12	1620000	5770410,9	0,556837	902076,617	3213180,707
13	1620000	5770410,9	0,530321	859120,588	3060172,102
14	1620000	5770410,9	0,505068	818210,084	2914449,621
15	1620000	5770410,9	0,481017	779247,699	2775666,306
16	1620000	5770410,9	0,458112	742140,666	2643491,72
17	1620000	5770410,9	0,436297	706800,634	2517611,162
18	1620000	5770410,9	0,415521	673143,461	2397724,916
19	1620000	5770410,9	0,395734	641089,01	2283547,539
20	1620000	5770410,9	0,376889	610560,962	2174807,18
SUM				39615315,4	80356189,41

Table 14: Long term scenario

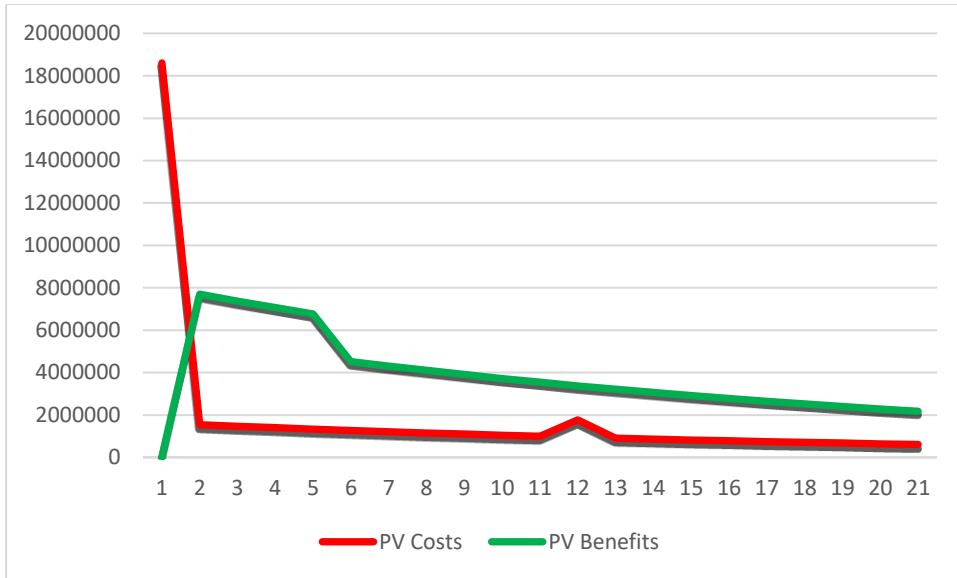


Figure 10: Line Graph (Long term scenario)

5. Discussion

The results under the monetized benefit, costs and CBA components adopted are shown in Appendices A and B. The overall present value of benefits (socioeconomic and ecological) for 10 years with a discount rate of 5% is 53,001,698.41€ for the 9 selected areas where ecotourism could be applicable. In addition, present value of costs (mainly economic) is 31,115,960.59 €. Their difference gives the NPV which is 21,885,737.82€ while the BCR ratio is 1.7033. As per the criteria recommending or not the project, it is clearly seen that NPV exceeds 0 so it produces more benefits than costs and $BCR > 1$, which implies that the proposed ecotourism pilot program provides greater benefits for East Attica residents and social entrepreneurs. In addition, ecotourism projects in the regional unit strengthen their potential through the 22% IRR which therefore boosts the main hypothesis of this paper that ecotourism activities at certain locations in East Attica represent an economically efficient alternative to the status quo. The selected variables (costs, benefits, discount rate) are aligned with the current economic situation of Greece's tourism which is skyrocketing. As a result, the proposed project represents high flexibility to different discount rates and changing conditions as its IRR is 22%. However, in a scenario of an extreme economic crisis which would result in a higher discount rate as there would be a bigger risk associated with the investment and its future costs-benefits and therefore the project might not be profitable.

The big difference that occurs between the costs and benefits, is mainly because of the total environmental value that was monetized through the price increase of East Attica properties surrounding the ecotourism facilities. However, the multiple environmental benefits that ecotourism can provide to the regional unit, could only be represented in numbers through the real estate prices increase and it could be assumed that the final value is objective if we take into account the non-monetized environmental benefits that these activities could come up with to a semi-urban regional unit. An interesting fact is that even if monetized environmental benefits were excluded from the calculations and the focus was stressed only on economic aspects, the project is still profitable as the total present value of revenue after 10 years is 44,132,494.94 € and exceeds the present value of costs giving a total NPV of 13,016,534.4 €. So, despite the ecological benefits that ecotourism can provide, it is still a high profitable business which could attract investors who are interested in social and economic welfare. Previously, it was explained why the maintenance costs were not considered (4.1.1) but even if they were taken into account, it could be assumed that they would not affect the final value of the project as the timescale of the CBA is short (10 years) and high maintenance costs in every project usually appears after the first 10 years. Adding to that, it should be

highlighted, that socioeconomic benefits that were not included in the final CBA analysis as they could not be monetized are more than significant as they can provide various indirect socioeconomic benefits as it was described in section [4.2.1](#).

The main significance of direct and indirect benefits relies on the vital role they can play to the contribution to a small-scale sustainable economy model. More specifically, most of the benefits would remain within the regional unit recommended areas and as a result mostly the locals would gain the positive outcomes of ecotourism implementations. In addition, in Greek Economy, increased property prices would lead to increased property taxes (Enfia) as it was explained in section [4.2.2](#). Therefore, a potential benefit of the public sector would be the increased taxes which could provide an estimated total present value benefit of 820,923.46€ to the state. Finally, it could be claimed that the suggested ecotourism small scale pilot program would not cause any minor or major negative impacts to the public or private sector if the recommendations of this paper are adopted. So, a win-win condition between private and public sector would be obtained as both public and private benefits outweigh the costs.

The proposed project aligns with the theory that ecotourism could potentially bring socioeconomic and environmental “growth”. The fact that indirect environmental benefits were monetized and transformed into economic benefits like the possible increases of real estate prices are a turning point which would influence locals accepting the project. In short, the monetization and the outcomes of the environmental and socioeconomic benefits withing the proposed recommendations ensures in some extent the feasibility of future ecotourism activities as a sustainable development regional strategy.

The following table summarizes CBA of this paper and provides the results under the criteria which were mentioned above (9 ecolodges,5 % discount rate and a 10 years’ timeframe).

						NPV	BCR
						21885748	1.70
Year(t)	Costs	Benefits	Wexp	PV Costs	PV Benefits	PV public costs	Pv publ.benefits
0	18606750	0	1	18606750	0	0	94,123.87
1	1620000	8084281.586	0.9523810	1542857.1	7699315.797	0	89641.783
2	1620000	8130559	0.9070295	1469387.8	7374656.689	0	85373.127
3	1620000	8177761.962	0.8638376	1399416.9	7064258.254	0	81307.74

4	1620000	8225908.983	0.822702475	1332778	6767475.677	0	77435.942
5	1620000	5770410.91	0.783526166	1269312.4	4521267.939	0	73748.517
6	1620000	5770410.91	0.746215397	1208868.9	4305969.466	0	70236.682
7	1620000	5770410.91	0.71068133	1151303.8	4100923.301	0	66892.079
8	1620000	5770410.91	0.676839362	1096479.8	3905641.239	0	63706.741
9	1620000	5770410.9	0.644608916	1044266.4	3719658.316	0	60673.087
10	1620000	5770410.9	0.613913254	994539.47	3542531.73	0	57783.892
			SUM	31115961	53001698.41	0	820,923.46

Table 15: CBA

6. Conclusions-Recommendations

6.1 Conclusions

The aim of this thesis was to investigate the potential ecotourism opportunities that a part of a metropolis might have. A potential ecotourism site should contain social, environmental, and economic benefits along with land availability, cultural heritage and a policy which would minimize the main threat of sustainable tourism sites: Over tourism. For that purpose, the following composite research question was formulated in order to address the multiple aspects that were mentioned above.

“What is the potential of ecotourism activities in East Attica, as a sustainable regional development policy, to increase the economic welfare of the region when considering its socioeconomic and ecological benefits and costs”?

To begin with, East Attica contains the two basic characteristics that an ecotourist seeks for, natural environment and cultural heritage. So, the researcher knew beforehand the regional unit's dynamics and its “strong” ecotourism potential and therefore, he wanted to do in-depth research in order to evaluate the socioeconomic welfare of the prospective activities. As a result, suitability analysis was necessary for the selection of 9 areas which could be ideal for ecotourism purposes and CBA was chosen for the evaluation of the socioeconomic benefits, ecological benefits, and costs. The basic criterion and characteristic of proposed ecolodges was to be as sustainable as possible, limiting environmental impacts and mass tourism effects (only 20% of the area would be used for ecolodges construction). Following this criterion, basic costs and benefits were formulated and those which could be monetized were considered for CBA calculations. Also, it was hypothesized in that if the net present value of a social CBA is positive, then this mostly private-led strategy could provide socioeconomic and ecological benefits to the regional unit. Consequently, CBA results were able to give the answer to the research question as they showed that a sustainable regional development policy would increase socioeconomic welfare of the region while providing ecological benefits which could influence other sectors towards a more sustainable future.

In addition, as ecotourism is highly linked to sustainable development and thus it does not only consider economic cost and benefits, but it focuses on socioeconomic and ecological benefits, the main investors of these kind of activities would be social entrepreneurs who seek for socioeconomic and environmental welfare. According to the CBA results that this thesis presented, the main aims of social entrepreneurship theory as they provided in section [2.1](#) are feasible and therefore achievable. Moreover, SET indicates that East Attica residents are

more prone to be positive on sustainable tourism development if the positive outcomes exceed the negative outcomes. The current situation in whole Attica region [1.2](#) along with the multiple potential indirect and direct socioeconomic and environmental outcomes that might occur after the implementation of the project, would lead to a positive social view which is essential for activities related to sustainability. Adding to that, the fact that sensitivity analysis scenarios showed that ecotourism would still be beneficial even with less promising parameters (increased discount rate, decreased revenue) and in a more expanded timeframe (20 years) assures in some extent, the feasibility and success of the project.

Moreover, the proposed project does not only offer benefits to the private sector and local society but also to the public sector. More specifically, taxes from each ecotourism facility along with the increased ENFIA as it was explained in [4.2.2](#) would lead to a significant economic value for the state. Furthermore, it could be assumed that a successful sustainable project as the recommended one, would improve country's contribution to United Nations and European Union's environmental goals. In other words, a policy which would ease and support ecotourism activities in East Attica, could be a first step towards a more holistic sustainable tourism model.

Summing up the above, ecotourism in East Attica requires that the government should closely cooperate with the municipalities as to formulate a strategic plan- policy as the one proposed which would focus on prioritizing public and private socioeconomic and ecological welfare and thus eliminating the greenwashing effect that often appears in ecotourism projects while also informing and supporting the locals who would be the main actors of sustainable tourism activities in the regional unit, about the various and interconnected positive effects that this project could provide.

Everything considered, the main findings of this thesis indicate that East Attica is an ideal "candidate" to develop ecotourism activities. As Greece's and in particular, Attica's one of main "products" is tourism, it is necessary to make it more sustainable in order to cope with global environmental concerns. In author's opinion, a pilot ecotourism model guided by the proposed sustainable regional development policy could provide benefits that some of them, might not be visible today for some people but if applied they would impact and even change the way Greece is observed as solely a conventional tourist destination. Summarizing, making some of these benefits observable to a wider audience, and as this paper's background and approach is explained through the three theories: SET, Welfare economics and Social Entrepreneurship, it could be assumed that if social entrepreneurs invest on these activities,

following the proposed policy, the project will achieve SET (Multiple direct and indirect effects) and finally regional socioeconomic welfare.

6.2 Recommendations for further research

As this thesis is based on similar previous ecotourism case studies which were combined with East Attica's characteristics, more detailed research is needed in order to estimate more accurately the socioeconomic and environmental efficiency of such a project. More specifically, construction sector experts could design a comprehensive plan regarding ecolodges which might differ from the proposed design and thus would be more valid. In addition, environmentalists and spatial analysts could further investigate possible threats that might occur which were not visible from the researcher. In addition, economists should perform in depth economic and risk analysis based on the possible outcomes as to achieve more reliable results. In addition, a survey targeting East Attica residents which would mention potential outcomes of ecotourism activities in the regional unit could give useful insights. Last but not least, policy makers should consider the above and thus provide a strategic plan which would fulfil the needs of public and private sector without sacrificing the sustainability principles.

To conclude, a comparison between the future costs and benefits of a similar scale conventional tourism and ecotourism project could be beneficial and give useful insights to Greece's public and private sector and based on the outcomes of this comparison, a larger scale ecotourism project could be operated in the country under a carefully structured strategic plan which would follow the recommendations of the experts who were mentioned above.

References

- Ahmad, J. A., & Silverina, A. K. (2014). Social Entrepreneurship in Ecotourism : An Opportunity for Fishing Village of Sebuyau , Sarawak Borneo. *Tourism, Leisure and Global Change*, 1(April 2013), 22–24.
- Anup, K. C. (2016). Ecotourism and Its Role in Sustainable Development of Nepal. *Tourism - From Empirical Research Towards Practical Application*. <https://doi.org/10.5772/62308>
- Backhouse, R., Baujard, A., Nishizawa, T., Backhouse, R., Baujard, A., Nishizawa, T., Backhouse, R. E., Baujard, A., & Nishizawa, T. (2020). *Revisiting the history of welfare economics To cite this version : HAL Id : halshs-02937994 Revisiting the history of welfare economics Review*.
- Baylatry Lao, M., Malivarn, S., & Viravouth, P. (2015). Cost-Benefit Studies of Natural Resource Management in Southeast Asia. *Cost-Benefit Studies of Natural Resource Management in Southeast Asia*. <https://doi.org/10.1007/978-981-287-393-4>
- Beneki, C. C., Rerres, K., Chionis, D. P., & Hassani, H. (2016). How to stimulate employment growth in the Greek hotel industry. *Tourism Economics*, 22(5), 865–883. <https://doi.org/10.5367/te.2015.0458>
- Bithas, K. (2011). Sustainability and externalities: Is the internalization of externalities a sufficient condition for sustainability? *Ecological Economics*, 70(10), 1703–1706. <https://doi.org/10.1016/j.ecolecon.2011.05.014>
- Boardman, A., Greenberg, D., Vining, A., & Weimer, D. (2006). *Cost-Benefit Analysis Concept and Practice Third Edition*.
- Bockarjova, M., Botzen, W. J. W., van Schie, M. H., & Koetse, M. J. (2020). Property price effects of green interventions in cities: A meta-analysis and implications for gentrification. *Environmental Science and Policy*, 112(June), 293–304. <https://doi.org/10.1016/j.envsci.2020.06.024>
- Caldicott, J., & Fuller, D. (2005). The concept and relevance of ecotourism to Indigenous economic and human development in remote Australian communities by The concept and relevance of ecotourism to Indigenous economic and human development in remote Australian communities by Julia Caldico. *Development*, February, 0–17.

- Cetin, M., & Sevik, H. (2016). Assessing Potential Areas of Ecotourism through a Case Study in Ilgaz Mountain National Park. *Tourism - From Empirical Research Towards Practical Application*. <https://doi.org/10.5772/62573>
- Çetinkaya, C., Kabak, M., Erbaş, M., & Özceylan, E. (2018). Evaluation of ecotourism sites: a GIS-based multi-criteria decision analysis. *Kybernetes*, 47(8), 1664–1686. <https://doi.org/10.1108/K-10-2017-0392>
- Chen, C. F., & Chen, F. S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism Management*, 31(1), 29–35. <https://doi.org/10.1016/j.tourman.2009.02.008>
- Dees, J. G. (2001). **【Reformatted and revised】** *The Meaning of “Social Entrepreneurship.”* 1–5.
- Drakopoulou, A. (2020). *Tourism certification and community-based ecotourism as tools for promoting sustainability in the Greek tourism sector - The example of Zagori*. 50.
- Drèze, J., & Stern, N. (1987). Chapter 14 The theory of cost-benefit analysis. *Handbook of Public Economics*, 2, 909–989. [https://doi.org/10.1016/S1573-4420\(87\)80009-5](https://doi.org/10.1016/S1573-4420(87)80009-5)
- European Communities. (2011). *The European Eco-Management and Audit Scheme*. 2.
- Fameli, Kyriaki Assimakopoulos, V. (2019). *LOCAL PROFILE OF EMISSIONS FROM RESIDENTIAL HEATING IN GREECE* (Issue October).
- Georgia Cheirchanteri. (2019). Industrial Cultural Heritage as an Alternative Tourism Model : Case study of the Wider Lavreotiki area in Southeastern Attica Industrial Cultural Heritage as an Alternative Tourism Model : Case study of the Wider Lavreotiki area in Southeastern Attica. *IOP*. <https://doi.org/10.1088/1757-899X/603/2/022001>
- Greenhalgh, S., Samarasinghe, O., Curran-Cournane, F., Wright, W., & Brown, P. (2017). Using ecosystem services to underpin cost–benefit analysis: Is it a way to protect finite soil resources? *Ecosystem Services*, 27, 1–14. <https://doi.org/10.1016/j.ecoser.2017.07.005>
- Haar, J. M. (2006). Challenge and hindrance stressors in New Zealand: Exploring social exchange theory outcomes. *International Journal of Human Resource Management*, 17(11), 1942–1950. <https://doi.org/10.1080/09585190601000147>
- Helbling, T. (2010). What Are Externalities? What happens when prices do not fully capture costs. *Finance & Development*, 47(4), 48–89.

- Hellenic Statistical Authority. (2014). *2011 Population And Housing Census. Economic characteristics of the Resident Population of Greece. September, 1–17.*
- IFC. (2004). *ECOLOGES :EXPLORING OPPORTUNITIES FOR SUSTAINABLE BUSINESS.*
- ISO. (2009). Environmental management The ISO 14000 family of International Standards. In *SpringerBriefs in Applied Sciences and Technology* (Issue 9783319236803).
https://doi.org/10.1007/978-3-319-23681-0_1
- Jegdić, V., & Gradinac, O. (2016). Cities as Destinations of Urban Ecotourism: The Case Study of Novi Sad. *Acta Economica Et Turistica, 2*(2), 155–166. <https://doi.org/10.1515/aet-2016-0014>
- Kalogirou, S. (2002). Expert systems and GIS: An application of land suitability evaluation. *Computers, Environment and Urban Systems, 26*(2–3), 89–112.
[https://doi.org/10.1016/S0198-9715\(01\)00031-X](https://doi.org/10.1016/S0198-9715(01)00031-X)
- Karytsas, S., Vardopoulos, I., & Theodoropoulou, E. (2019). Factors affecting residents' attitude toward sustainable tourism development. *Tourismos, 14*(1), 1–40.
- Lenao, M., & Basupi, B. (2016). Ecotourism development and female empowerment in Botswana: A review. *Tourism Management Perspectives, 18*, 51–58.
<https://doi.org/10.1016/j.tmp.2015.12.021>
- Levin, H. M. (1995). *Cost-effectiveness Analysis.* 381–386.
- Malczewski, J. (2004). GIS-based land-use suitability analysis: A critical overview. *Progress in Planning, 62*(1), 3–65. <https://doi.org/10.1016/j.progress.2003.09.002>
- Mayrhofer, D. K., & Cortes, F. R. (2019). Cost benefit analysis, A technical note. In *World Bank* (Vol. 68, Issue 4).
- Meng, Z., Jun, Y., & Zhengzheng, W. (2009). Reflections on the connotations of ecotourism. *Chinese Journal of Population Resources and Environment, 7*(2), 67–70.
<https://doi.org/10.1080/10042857.2009.10684926>
- Ministry of Finance. (2019). *Prefectural Administration of East Attica.*
- Ministry of Finance. (2021). *Land Objective Values.*
- Ministry of Finance. (2022). *Estimation of Housing Value.*
- Mishan, E. J., & Quah, E. (2005). *Cost Benefit Analysis 5th Edition Mishan & Euston.pdf.*

- Nas, T. F. (2006). Cost benefit analysis. *Handbook of Decision Making*, 483–490.
<https://doi.org/10.4324/9780203062715-17>
- Official Government Gazette. (2022). Development Law 4887. *Official Government Gazette*.
- PAHO. (2019). *Methodology: Cost-benefit analysis*. <https://doi.org/10.1016/B978-0-12-809633-8.20776-0>
- Parks. (2020). *Ecotourism facilities on national parks : implementation framework*. December, 1 online resource (24 pages : illustrations).
- Peredo, A. M., & McLean, M. (2006). Social entrepreneurship: A critical review of the concept. *Journal of World Business*, 41(1), 56–65. <https://doi.org/10.1016/j.jwb.2005.10.007>
- Pieri, S. P., Stamos, A., & Tzouvadakis, I. (2014). Reducing tourist carbon footprint through strategic mapping of the existing hotel stock – Attica. *International Journal of Sustainable Energy*, 35(8), 734–745. <https://doi.org/10.1080/14786451.2014.943757>
- Piñeiro-Chousa, J., López-Cabarcos, M., Romero-Castro, N., & Vázquez-Rodríguez, P. (2021). Sustainable tourism entrepreneurship in protected areas. A real options assessment of alternative management options. *Entrepreneurship and Regional Development*, 33(3–4), 249–272. <https://doi.org/10.1080/08985626.2021.1872937>
- POEET. (2021). *Tourism employees salary(Greece)*.
- Prandano, M. (2014). EVALUATING TOURISM EXTERNALITIES IN DESTINATIONS: THE CASE OF ITALY. In *Università degli Studi di Sassari*. <https://doi.org/10.2495/st120111>
- Rathore, C. S., Dubey, Y., Shrivastava, A., & Pathak, P. (2008). Promoting Eco-Tourism to Conserve Wildlife Corridors : A Strategy for the Kanha – Pench Landscape in India. *The Tourism Development Journal*, 5 & 6(1), 1–19.
- Robinson, L. A., Hammitt, J. K., Cecchini, M., Chalkidou, K., Claxton, K., Cropper, M. L., Eozenou, P., de Ferranti, D., Deolalikar, A. B., Campos Guanais de Aguiar, F., Jamison, D. T., Kwon, S., Lauer, J. A., O’Keeffe, L., Walker, D., Whittington, D., Wilkinson, T., Wilson, D., & Wong, B. (2019). Reference Case Guidelines for Benefit-Cost Analysis in Global Health and Development. *SSRN Electronic Journal*, May. <https://doi.org/10.2139/ssrn.4015886>
- Saeed, A. A., & Mullahwaish, L. T. (2020). Effect of green areas density on real estate price in Ramadi city. *International Journal of Design and Nature and Ecodynamics*, 15(2), 253–259.
<https://doi.org/10.18280/ijdne.150216>

- Sarkar, S. K. (2016). Urban Ecotourism Destinations and the Role of Social Networking Sites, A Case of Kuala Lumpur. *Ecoclub*, 39.
- Shams, A. M. (2006). *INFRASTRUCTURE DESIGN CONCEPT FOR ECO-LODGE AROUND PROTECTED AREAS*.
- Shrivastava, P., Stafford Smith, M., O'Brien, K., & Zsolnai, L. (2020). Transforming Sustainability Science to Generate Positive Social and Environmental Change Globally. *One Earth*, 2(4), 329–340. <https://doi.org/10.1016/j.oneear.2020.04.010>
- Situmorang, D. B. M., & Mirzanti, I. R. (2012). Social Entrepreneurship to Develop Ecotourism. *Procedia Economics and Finance*, 4(lcsmed), 398–405. [https://doi.org/10.1016/s2212-5671\(12\)00354-1](https://doi.org/10.1016/s2212-5671(12)00354-1)
- Spilanis, I., & Vayanni, H. (2004). Sustainable tourism: Utopia or necessity? the role of new forms of tourism in the aegean Islands. *Coastal Mass Tourism: Diversification and Sustainable Development in Southern Europe*, 00(0), 269–291. <https://doi.org/10.21832/9781873150702-015>
- Taylor, J. E., Dyer, G. A., Stewart, M., Yunez-Naude, A., & Ardila, S. (2003). The economics of ecotourism: A Galápagos Islands economy-wide perspective. *Economic Development and Cultural Change*, 51(4), 977–997. <https://doi.org/10.1086/377065>
- Tolpin, H. G. (1988). Overview of CBA and CEA methods. *Therapeutic Innovation & Regulatory Science*, 22(3), 281–289. <https://doi.org/10.1177/009286158802200302>
- Trojanek, R., Gluszek, M., & Tanas, J. (2018). The effect of urban green spaces on house prices in Warsaw. *International Journal of Strategic Property Management*, 22(5), 358–371. <https://doi.org/10.3846/ijspm.2018.5220>
- Turner, M. J., & Hesford, J. W. (2019). The Impact of Renovation Capital Expenditure on Hotel Property Performance. *Cornell Hospitality Quarterly*, 60(1), 25–39. <https://doi.org/10.1177/1938965518779538>
- Vanhove, N. (2010). The economics of tourism. In *Journal of Tourism History* (Vol. 2, Issue 3). <https://doi.org/10.1080/1755182x.2010.516898>
- Vanhove, N. (2013). TOURISM PROJECTS AND COST-BENEFIT ANALYSIS. *Handbook of Tourism Economics*, 393–415. <https://doi.org/10.5790/hongkong/9789888028122.003.0019>

- Verschuren, P., & Doorewaard, H. (2010). Designing a Research Project. *Eleven International Publishing*, 357–372. <https://doi.org/10.4135/9781529714333.n24>
- Wang, S., & Chen, J. S. (2015). The influence of place identity on perceived tourism impacts. *Annals of Tourism Research*, 52, 16–28. <https://doi.org/10.1016/j.annals.2015.02.016>
- Weaver, D. B., & Lawton, L. J. (2007). Twenty years on: The state of contemporary ecotourism research. *Tourism Management*, 28(5), 1168–1179. <https://doi.org/10.1016/j.tourman.2007.03.004>
- Wittowsky, D., Hoekveld, J., Welsch, J., & Steier, M. (2020). Residential housing prices: impact of housing characteristics, accessibility and neighbouring apartments – a case study of Dortmund, Germany. *Urban, Planning and Transport Research*, 8(1), 44–70. <https://doi.org/10.1080/21650020.2019.1704429>
- Wu, Y. Y., Wang, H. L., & Ho, Y. F. (2010). Urban ecotourism: Defining and assessing dimensions using fuzzy number construction. *Tourism Management*, 31(6), 739–743. <https://doi.org/10.1016/j.tourman.2009.07.014>
- WWF. (2003). *Ecotourism methods in Greek Protected areas*.
- EOT. (2010). *Strategic development for ecotourism activities*.

Websites

- (n.d.). Retrieved from Wttc: <https://wttc.org>
- (2021). Retrieved from Hellenic Chamber of Hotels: <https://www.grhotels.gr/>
- (2022, March). Retrieved from <https://news.gtp.gr>.
- (2022, March). Retrieved from Greek Travel Pages:Greece's Latest Tourism Industry news: <https://news.gtp.gr/>
- (2022). Retrieved from Attica: <https://athensattica.com>
- OECD. (2022). Retrieved from <https://www.oecd-ilibrary.org>
- Population Reference Bureau. (2022). Retrieved from <https://www.prb.org>

World Data. (2019). Retrieved from <https://www.worlddata.info>

World Travel & Tourism Council. (2019). Retrieved from <https://wttc.org>

Google Earth(2022).Retrieved from <https://earth.google.com/>

Chiarra, M. (2016, March 4). *ecobnb*. Retrieved from <https://ecobnb.com/>

CFI. (2022, MARCH 4). *Corporate Finance Insitute*. Retrieved from
<https://corporatefinanceinstitute.com/>

Demographia. (2022). *International House Sizes*.

EDF. (2022). Retrieved from ENVIRONMENTAL DEFENSE FUND: <https://www.edf.org/>

Population Reference Bureau. (2022). Retrieved from <https://www.prb.org>

Appendix A.
Costs Calculation

Year	Land acquisition	Construction	labor	Total cost
0	2406749,994	16200000	0	18606749,99
1	0	0	1620000	1620000
2	0	0	1620000	1620000
3	0	0	1620000	1620000
4	0	0	1620000	1620000
5	0	0	1620000	1620000
6	0	0	1620000	1620000
7	0	0	1620000	1620000
8	0	0	1620000	1620000
9	0	0	1620000	1620000
10	0	0	1620000	1620000

Appendix B.

BENEFITS CALCULATION							
Year	"Green"Inc	pr.house.inc	Increase	Total value	revenue	co2 reduction	Total benefits
0	0	101282.99	0	0	0	0	0
1	2%	103308.6498	2025.6598	2313870.676	5715360	55050.91	8084281.586
2	2%	105374.8228	2066.173	2360148.09	5715360	55050.91	8130559
3	2%	107482.3193	2107.49646	2407351.052	5715360	55050.91	8177761.962
4	2%	109631.9656	2149.64639	2455498.073	5715360	55050.91	8225908.983
5	0%	109631.9656	0	stabilised	5715360	55050.91	5770410.91
6	0%	109631.956	0	stabilised	5715360	55050.91	5770410.91
7	0%	109631.956	0	stabilised	5715360	55050.91	5770410.91
8	0%	109631.956	0	stabilised	5715360	55050.91	5770410.91
9	0%	109631.956	0	stabilised	5715360	55050.91	5770410.9
10	0%	109631.956	0	stabilised	5715360	55050.91	5770410.9

Appendix C.

Years	PVB	PVC	NPV	IRR
0	0	18606750	18606750	22%
1	7699316	1542857	6156459	
2	7374657	1469388	5905269	
3	7064258	1399417	5664841	
4	6767476	1332778	5434698	
5	4521268	1269312	3251956	
6	4305969	1208869	3097101	
7	4100923	1151304	2949620	
8	3905641	1096480	2809161	
9	3719658	1044266	2675392	
10	3542532	994539,5	2547992	