Journal of Regional & Socio-Economic Issues

Volume 15, Issue 1, January 2025

ISSN 2049-1409

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Indexed by Copernicus Index, DOAJ (Director of Open Access Journal), EBSCO, Cabell's Index
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JOURNAL OF REGIONAL SOCIO-ECONOMIC ISSUES (JRSEI)

Volume 15, Issue 1, January 2025

Journal of Regional & Socio-Economic Issues (Print) ISSN 2049-1395

Journal of Regional & Socio-Economic Issues (Online) ISSN 2049-1409

Indexed by Copernicus Index, DOAJ (Director of Open Access Journal), EBSCO, Cabell's Index

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Energy and Water Conservation in Schools in the Prefecture of Evros

Abstract:
The energy issue and the need for securing water are two major problems faced by modern society. Given their large number and the multitude of their members, schools are significant spaces for energy consumption and the use of water resources. For this reason, it is important to implement policies and practices which control the waste of energy and water, contributing to a reduction in their environmental footprint. The implementation of these actions is important for another reason as well: apart from the direct environmental benefits derived from energy and water conservation, they also promote the adoption of these practices by students in their daily lives, who represent the future generation. This paper discusses the results of interviews with 30 teachers working in primary schools in the Prefecture of Evros, Greece. The interview questions focused on the extent of implementation of policies and practices related to the minimization of the energy footprint of school units and the consumption of water in these schools.

Keywords: Energy conservation, water conservation, school units, school buildings, teachers, students

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1. Introduction

Interest in sustainability and the proper management of the planet in order to achieve a sustainable future for the next generations has been significantly driven by the impacts of climate change, which modern society is facing. In the context of growing awareness of the negative consequences of climate change and calls for urgent action to reduce greenhouse gas emissions, coordinated efforts to integrate Education for Sustainable Development (ESD) into the school environment have become imperative (Somerville & Williams, 2015). Indeed, in recent years, there has been a growing global interest in this area (Porter & Córdoba, 2009). Consequently, the idea that ESD should entail extensive educational reform has become stronger and more apparent (Robottom, 2009).

ESD redirects the educational process and learning, creating opportunities for all learners to acquire knowledge, skills, values, and behaviors to promote a sustainable future (UNESCO, 2005). It is an emerging practice grounded in the relationship between educators, students, and other members of the school community (Green & Somerville, 2015). ESD essentially advocates an ideology of care for both the environment and the people who live in it, while simultaneously promoting the personal well-being of learners through improving their quality of life and the decisions they are called to make about their lives (McFarlane & Ogazon, 2011).

Within this framework, the concept of the sustainable school was developed. The idea of its creation emerged as a response to growing concerns about environmental issues and the need to adopt the principles of sustainable development. Specifically, the need for a clear plan outlining the characteristics of a sustainable school arose from an ecological school model proposed by the "Foundation for Environmental Education in Europe" in 1994. The goal of this plan was the gradual introduction of Environmental Education (EE) into every aspect of school management and the creation of an integrated environmental management system for schools (Zhao et al., 2015). In the same year, the "International Eco-Schools Programme" was founded with the support of the European Union. The mission of the program was to introduce environmental management systems in primary schools in the context of implementing ISO 14001/EMAS systems (Tonuk & Kayihan, 2012).

The operation of a sustainable school is based on the values and principles of sustainability, which are applied to every aspect of school life, such as the learning process, administration, transportation to and from the school, and the management of school buildings (Kalaitzidis, 2012). Key characteristics of a sustainable school include a holistic approach to the curriculum, practical application of sustainability values, development of a positive learning environment, and creation of a hidden curriculum conducive to sustainability (Kalaitzidis et al., 2021). The integration of the principles of ESD at all levels and sectors of the educational process, from the structure of the curriculum to the use of teaching methods which enhance authentic learning experiences and provide opportunities for reflection and inquiry, are essential aspects of embedding sustainable schools (Woo et al., 2012).

All of these characteristics are considered crucial for promoting sustainable development through the educational process, as the development of skills and the active participation of all members of the school community in sustainability-related actions creates a sense of responsibility which contributes to the interactions between the school and the wider community (Kalaitzidis, 2012).

According to UNESCO's guidelines for ESD, schools should implement teaching approaches that integrate goals for environmental sustainability, social justice, democracy, and economic development in a vision for personal and social change. Therefore, sustainable schools should adopt policies which address all three dimensions of sustainable development—environmental, social, and economic (Bakhati, 2015), following relevant environmental, social, and economic sustainability indicators (Gough, 2006). As a result, focusing on the three dimensions of sustainable development allows for the classification of

sustainable school characteristics into three general areas of organization: pedagogical (curriculum, learning process, school culture), social and organizational (organization, administration, relationships with the wider community and other stakeholders), and environmental-technical-economic (school environment, facilities, school yard) (Kalaitzidis, 2012).

Specifically, the environmental-technical-economic sector, within which this research was conducted, focuses on actions which promote environmental sustainability, while at the same time, proper school management can result in financial benefits. In particular, this sector includes actions related to energy conservation, waste management, promoting recycling, using renewable energy sources, establishing school gardens, eco-friendly transportation, rational resource and material management, the use of recyclable materials, and the use of ecological cleaning products (Tsiokos et al., 2020). Overall, this sector's main focus is the reduction of a school's ecological footprint, which can lead to lower operating costs for the school building (Kalaitzidis, 2012).

It has been widely noted that school units are among the most important spaces for applying the principles of sustainable development (Scott, 2013). In order to turn the vision of ESD into practice, the characteristics of a school organization and the thematic areas which cover all dimensions of sustainability must be identified and analyzed (Mogren et al., 2018). Sustainable schools have a critical task: to educate new generations and make the promotion of sustainable development worldwide feasible. All studies related to sustainable schools demonstrate that these schools are healthier places to work and learn, have minimal negative impacts on the environment, and have lower operating costs compared to conventional schools (Tonuk & Kayihan, 2012).

Following a review of the literature on energy and water conservation in schools, this paper discusses the results of interviews with 30 teachers working in primary schools in the Prefecture of Evros, Greece. The interview questions focused on the extent of implementation of policies and practices related to the minimization of the energy footprint of school units and the consumption of water in these schools.

2. Energy and Water Conservation in Schools

Currently, environmental concerns about the future and sustainability of the planet are intensifying, with energy issues and securing water resources at the forefront of these concerns. Furthermore, the prudent use of energy and water in school buildings plays a significant role in the sustainability performance of municipalities, which is why it has become part of many local policies for sustainable energy (Gamarra et al., 2018). Recognizing the severity of the problem, recent years have seen efforts at both national and local levels to establish policies and develop strategies aimed at the maintenance and energy fortification of school buildings, as well as the conservation of water resources used (Booysen et al., 2019).

School buildings require the consumption of large amounts of energy to function properly. This leads to negative environmental impacts, such as increased carbon dioxide emissions and the depletion of non-renewable energy sources. The world is now facing an escalating energy crisis, as the use of fossil fuels not only harms the environment but also leads to energy shortages. Consequently, understanding the risks of this situation, the global community has developed many plans to improve the energy efficiency of school facilities. According to AlFaris et al. (2016), following comprehensive energy management programs in school buildings could significantly improve energy efficiency by up to 35%. However, to achieve energy sustainability in a school, comprehensive strategies for sustainable design and construction must be adopted (Zhang et al., 2020).

The first step in mitigating energy waste is changing the mindset of individuals who perceive energy consumption reduction as unrelated to them or as not their problem. For energy-saving measures to succeed in a school facility, they must be implemented as part of a

holistic energy management program, involving all stakeholders, including teachers and students. Therefore, a spirit of energy economy must be cultivated within the school environment, with practices being adopted across the entire school community which promote energy conservation daily. Through appropriate methodological approaches, programs and work plans focusing on energy, renewable and non-renewable energy sources, and the importance of energy conservation can be implemented. According to McNichol et al. (2011), well-planned changes to a curriculum, combined with other practices, can lead to a significant shift in the energy footprint of a school building.

Clearly, in addition to changing the attitudes of members of the school community, other actions are needed in order to reduce the energy footprint of a school facility. Constructing school buildings which meet ecological design criteria or renovating old buildings based on ecological principles is a fundamental component of mitigating their energy consumption. A study by Gaitani et al. (2015) presented a negative picture for Greece, where, in 2015, of the 15,446 schools existed, only 4,500 were more than 45 years old, implying significant issues with building infrastructure. However, this situation could be improved, as studies have shown that effective maintenance of school buildings (e.g., external insulation, double-glazing, window replacement) could increase energy efficiency by up to 20%, regardless of the building's age (AlFaris et al., 2016). Therefore, the energy upgrade of existing buildings and the construction of new buildings following ecological specifications can reduce the energy footprint while simultaneously lowering the operational costs associated with energy consumption in schools (McNichol et al., 2011).

The term "sustainable buildings" or "green buildings" is often used to refer to buildings which apply a holistic approach to integrated systems, including their design, construction, and operation (Ramli et al., 2012). Therefore, for a building to be considered "sustainable," it is not enough to meet energy efficiency construction requirements; the functions which take place within it must also contribute to sustainability. In this context, it becomes imperative to reduce costs, e.g., fuel consumption, while educating students about energy conservation (Cooper, 1985).

Developing environmentally conscious attitudes among teachers and students is an important factor in reducing a school's ecological footprint. However, this does not automatically lead to the adoption of behaviors which effectively contribute to reducing energy consumption. For this reason, emphasis should be placed on adopting practices which, without hindering the functionality of school communities, align with the spirit of energy conservation. Such practices include the proper management of electrical devices, such as computers, projectors, photocopiers, and printers, prioritizing natural light on sunny days, and the correct management of heating and cooling systems in school buildings. It is remarkable that, according to research conducted on U.S. schools, the use of electronic devices and lighting accounted for 46% of total energy consumption in American schools (Lourenço et al., 2014).

Another significant factor in energy conservation in schools is the physical insulation of buildings through a) the planting of deciduous trees on the south side to block sunlight during the warmer months and allow sunlight to heat the building in winter, and b) the planting of conifers on the north side to block cold winds. Most schools in Greece are heated using boilers. Special attention should be given to managing temperature limits correctly, as school buildings are usually large and require significant energy consumption. Therefore, lower temperature limits are recommended for gyms, hallways, and storage rooms compared to classrooms (Rahioti 2014).

In addition, the shift towards renewable energy sources (such as installing photovoltaic systems on roofs or using geothermal fields) is a measure which could meet a significant portion of a school's energy needs (Yilmaz et al., 2016). According to the results of improvement measures involving renewable energy sources, it has been calculated that

schools could reduce fossil fuel use for building energy needs by between 64.06% and 78.98% (Gamarra et al., 2018).

Another measure is the installation of thermostats to control building temperatures. Furthermore, systematic maintenance of heating system devices helps improve energy efficiency. Another practice involves the use of fluorescent bulbs, which are more energy-efficient than incandescent bulbs, or even better, the use of LED bulbs. Additionally, the use of light controllers to adjust light intensity and the installation of photoelectric cells in appropriate locations, which turn lights on or off depending on the level of natural light, contribute to the energy efficiency of lighting (Rahioti 2014). However, the most important measure for improving lighting efficiency comes from the users of the school buildings themselves, who should not leave lights on when classrooms and offices are not in use. Furthermore, air renewal in classrooms is a primary hygiene rule and should be done frequently, keeping in mind the reduction of energy waste for replenishing lost heat. To achieve this, modern technological methods that do not require large amounts of energy can be used (Tsiokos et al., 2020).

The creation of more energy-efficient schools not only helps prevent greenhouse gas emissions but has also been shown to improve the learning environment for students (Bueno, 2019). According to Berman et al. (2018), poor-quality buildings are linked to lower academic performance among children. Undoubtedly, a sustainable school not only benefits from lower energy consumption but also provides a healthy, comfortable, and productive learning environment for both students and teachers (Zhang et al., 2020).

In addition to the energy issue, another important problem which causes global concern is the need for water conservation, as water supply worldwide is limited. Increasing periods of drought and water shortages in certain areas, such as the Mediterranean, make the need for water-saving measures even more urgent (Morote et al., 2020). Population growth and the effects of climate change are putting pressure on water systems, making it necessary to apply a sustainable approach to water management. This can be achieved through a series of processes, including minimizing water consumption, collecting water, and reusing it (EL-Nwsany et al., 2019).

The systematic implementation of sustainable water management is important for schools, as large quantities of water are consumed daily (e.g., faucets, toilets, laboratories, outdoor play areas, gardens) (Countryman & Moore, 2007). As with energy conservation, an important component of sustainable water management in schools is raising awareness among students on this issue. Thus, besides the environmental benefits, establishing a holistic approach to water management also contributes positively to the education of future generations (Tonuk & Kayihan, 2012) regarding the advantages of conserving our natural resources. Along with the economic benefits of water conservation, a responsible environmental attitude is encouraged among students, who will rebuild society in the future (Morote et al., 2016), and a sense of social responsibility is promoted, which is a key element of sustainable development (EL-Nwsany et al., 2019).

Schools provide ideal conditions for promoting water conservation because they use large amounts of water and the interventions which can be made have the potential to generate multiple benefits for the community (Visser et al., 2021). In addition, the proper maintenance of the water supply system is a key element, as it is essential for the good health of its users. Actions related to water management should aim to highlight the importance of water as a vital resource and raise awareness about the consequences of its careless use and consumption, thus encouraging responsible behaviors (López-Alcarria et al., 2021). Through these actions, students will be able to understand the water-saving process in practice, as they will actively participate in it. The goal of sustainable schools in terms of water conservation is to minimize the use of potable water within the buildings and reduce the use of water for irrigation purposes in the school yard (EL-Nwsany et al., 2019).

The first step towards achieving this goal is to examine and analyze the quantities of water consumed by school units and re-evaluate actions which could be implemented if wasteful consumption is observed (López-Alcarria et al., 2021). Unfortunately, according to Morote et al. (2020), measures to promote water conservation in schools are limited, as no money is invested in installing water-saving devices, nor are plans made for the use of non-conventional water sources for irrigation in school gardens.

3. Methodology

With regard to data collection, the method used was the interview, specifically the semi-structured interview. In this approach, the researcher asks specific questions, but also has the flexibility to explore issues beyond the pre-prepared questions, depending on the situation as it evolves. At the same time, this type of interview allows the respondents to feel freer in expressing their views, as the researcher creates a general framework with the main questions, but the detailed process is co-developed by the researcher and the respondent during the interview (Wilson, 2014). Therefore, the semi-structured interview was chosen for this study because the focus was on direct communication with the respondents, which guided the exploration of their perceptions, motivations, and attitudes toward the adoption of energy and water conservation practices in schools. Through interpersonal interaction, the study aimed to uncover deeper meanings, while also attempting to identify the key barriers which slow the development of sustainable practices in the Greek educational context.

A key feature of the semi-structured interview is the flexibility it offers the researcher in formulating questions, without the discussion being entirely free (Liatsou, 2014). Semi-structured interviews are particularly suitable for pilot studies (Papaioannou et al., 2003) and for addressing complex topics, as they give the researcher the opportunity to use both predetermined and spontaneous questions to deepen the understanding of the issue under investigation and the responses given (Harrell & Bradley, 2009). Therefore, for these reasons, this method was deemed the most suitable for studying the implementation of practices related to energy and water conservation in sustainable schools and analyzing the factors which can promote it.

In addition, semi-structured interviews are appropriate for small-scale research (Drever, 2003) and cases where respondents have general knowledge of a topic but the researcher wants to encourage them to explore new issues. The questions framing the interview include the central question, while new questions are developed during the interview, contributing to a deeper exploration of the issue through pilot testing (Jamshed, 2014). Therefore, this method was the ideal choice for the current study, which focused on the study of a specific topic, allowing for flexibility, and for which a small, representative sample was selected.

The target population for this research consisted of teachers working in primary schools in the Prefecture of Evros. Specifically, the study involved a total of 30 participants, 23 women and 7 men. The aim of the research was to select teachers from all specialties working in primary schools, rather than only recording the opinions of a specific group of teachers within one specialty. In detail, 17 primary school teachers, 3 English teachers, 2 physical education teachers, 2 IT teachers, 2 drama teachers, 1 music teacher, 1 arts teacher, 1 German teacher, and 1 French teacher participated. All participants were, at the time the research was carried out, active teachers in primary education.

At the same time, an effort was made to select participants from different schools in the Evros region in order to provide a more comprehensive approach to the issue and derive conclusions which apply to all primary schools in the region. Regarding the years of service of the participants in primary education, the largest group has worked for 11-20 years (11 people), followed by those with 21-30 years of service (7 people), then those with 0-10 years of service (7 people), and lastly, those with 31-40 years of service (5 people). The majority of

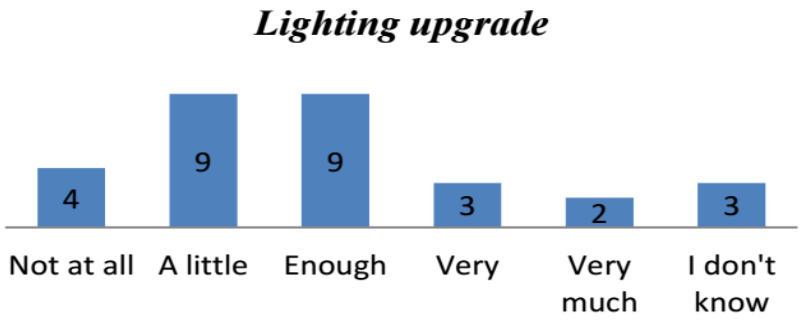
participants have received university education, a small percentage graduated from a pedagogical academy, and many participants were holders of one or more postgraduate degrees.

4. Results

A total of 14 predefined questions were asked to the participants, which led to discussions on the topic of energy and water conservation in primary schools. Specifically, the results of the research were shaped by the processing and analysis of the following questions:

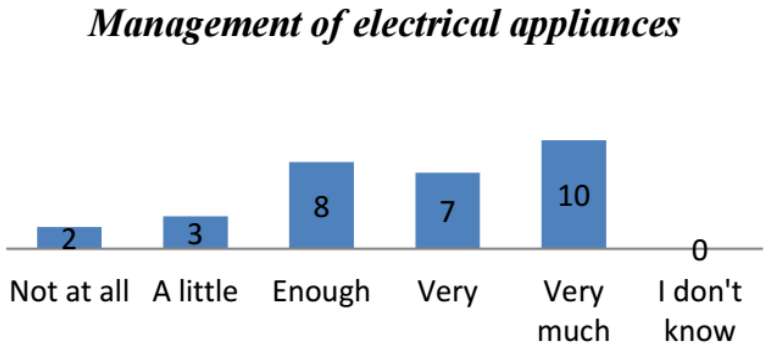
(1). To what extent are lighting upgrade procedures implemented in your school?

This question focused on the existence of energy-efficient lighting installations, the replacement of incandescent bulbs, and the preference for LED bulbs. Furthermore, participants were asked if their school uses light controllers to adjust the intensity of the lighting or if light sensors have been installed in suitable locations which automatically turn the lights on and off based on changes in natural light. Most respondents mentioned that lighting upgrades in their schools are at moderate or low levels, and that these upgrades mainly involve replacing incandescent bulbs with LED bulbs. Only a few respondents mentioned the presence of smart lighting systems designed to ensure energy efficiency in school buildings.



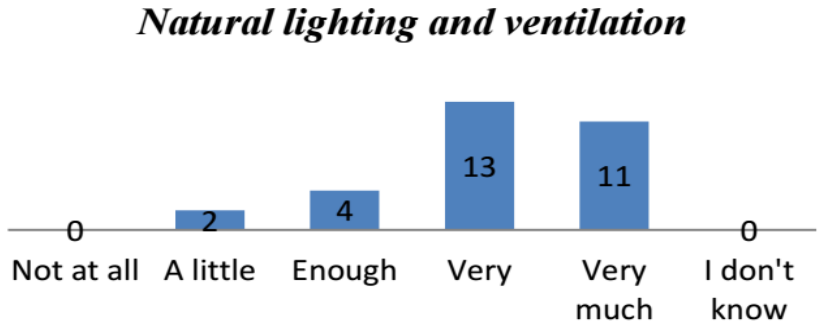
(2). Are there efforts to properly manage the use of electrical devices in your school?

This question focused on the actions taken by members of the school community to contribute to energy conservation through controlled use of electrical devices used daily in schools, such as computers, projectors, photocopiers, and printers. The results of this question were quite encouraging, as the majority of participants reported that proper management of electrical devices is largely achieved within their schools, with efforts to avoid energy waste whenever possible. Specifically, a significant number of respondents clarified that electrical devices are never left on by mistake, and that at the end of each school day, a check is made to ensure all computers and photocopiers are turned off.



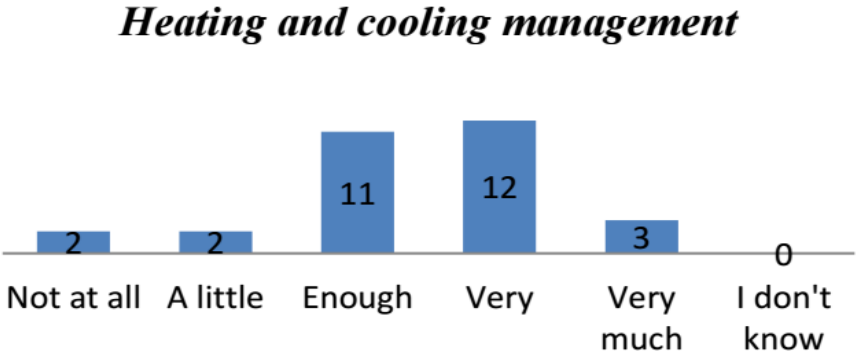
(3). To what extent is natural lighting and ventilation preferred in the classrooms of your school (whenever this is feasible), and is the lighting turned off during breaks?

This question aimed to determine the degree to which natural lighting is preferred in classrooms on sunny days, as well as natural ventilation when weather conditions allow. The majority of respondents gave positive answers, indicating the awareness of the school community members regarding this issue. In addition, the question also focused on the turning off of lights when classrooms are not in use (e.g., during breaks), and again, the responses were very encouraging, highlighting efforts toward energy savings.



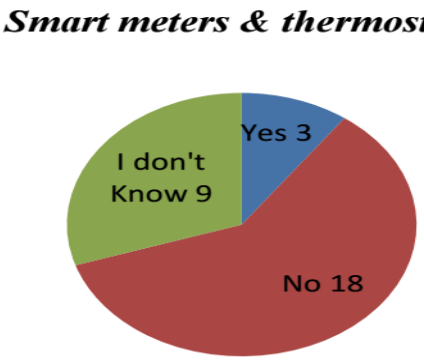
(4). Is there an effort to properly manage heating and cooling at your school?

This question sought to explore the extent to which proper management of heating and cooling systems is achieved in the school buildings. Once again, the answers collected were fairly encouraging, as most respondents mentioned that heating and cooling are managed to a satisfactory level during the school day. Moreover, participants were asked whether lower temperature limits are maintained in gyms, hallways, storage areas, and other spaces not in use throughout the school day, compared to classrooms, and most respondents answered affirmatively. Regarding the regular maintenance of heating and cooling systems, the responses were also positive. Some participants mentioned that energy conservation in this area is primarily driven by economic reasons, but the result certainly contributes to reducing the school's environmental footprint.



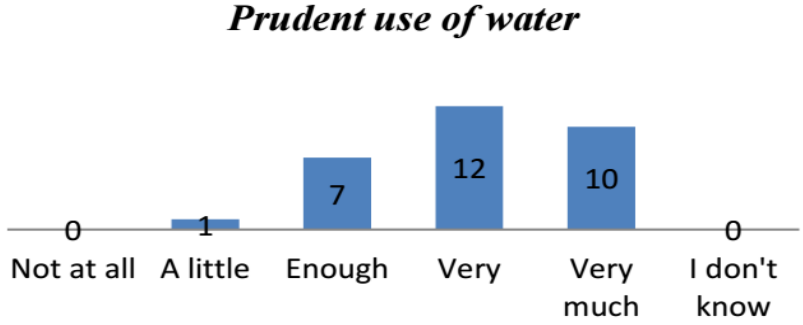
(5). Are smart meters and thermostats used in your school to ensure energy efficiency?

This question related to the presence of smart energy meters which record and monitor energy usage in real-time in school spaces. It also addressed the installation of thermostats which control and regulate the temperature of school areas, maintaining a desired and consistent temperature. The responses to this question were discouraging, as the majority of participants reported that such devices are not present in their schools.



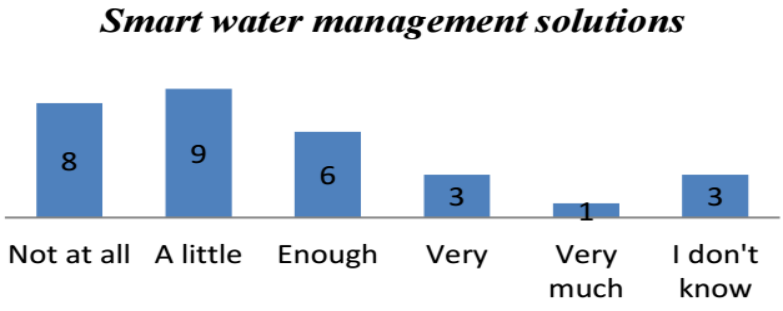
(6). Is water used wisely in your school, and are practices applied to limit wasteful consumption?

This question concerned actions aimed at saving water in school communities. It examined the extent to which school community members minimize water consumption by avoiding excessive use. The recorded responses were very encouraging, as most respondents indicated that water is not wasted in the school spaces. They also showed that teachers often remind students about the importance of water conservation, which shows a high level of awareness among the users regarding the preservation of the water resource.



(7). Are smart water management solutions applied in your school?

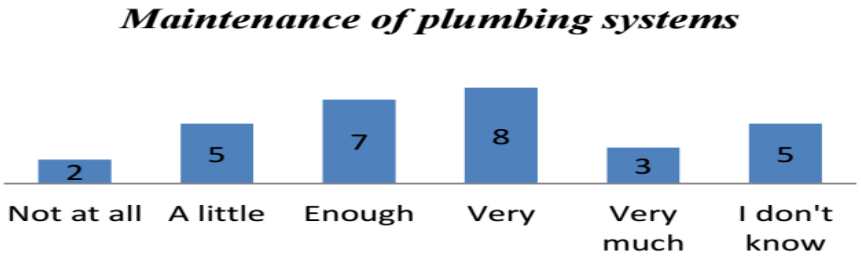
This question aimed to explore the use of technologies and systems which allow for more efficient water usage, such as smart water meters which record water consumption in real-time, smart faucets with sensors which adjust water flow and reduce consumption, motion-sensor faucets which automatically shut off when not in use, and low-flow toilets with adjustable flush settings. The data collected from this question was very discouraging, as the majority of respondents stated that such practices are either applied to a small extent or not at all in their schools.



(8). Is there regular maintenance of the plumbing installations at your school?

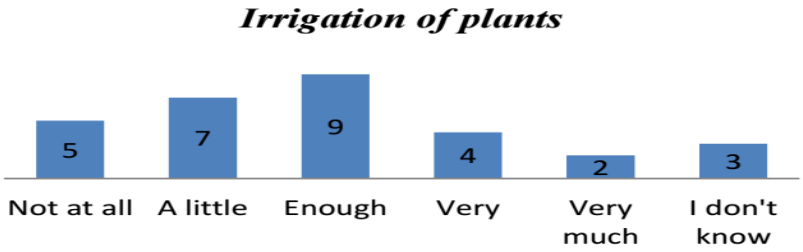
This question explored the issue of systematic maintenance of plumbing systems, which requires careful usage by the school community members. The question focused on the repair of leaks in faucets and toilets and the presence of leak detection systems which can identify small or large leaks and send alerts to the user or water utility company, thus reducing

water loss and maintenance costs. The answers to this question were somewhat unclear, with most participants rating the maintenance of plumbing installations as satisfactory or average.



(9). Are practices applied in your school to prevent water waste during irrigation of plants in the schoolyard?

This question focused on the process of irrigating plants in the schoolyards using advanced techniques, such as installing automatic irrigation systems with shutdown capabilities and moisture sensors which help reduce the required amount of water. It also explored the collection of rainwater in storage tanks, which can later be used for irrigation, and the selection of local plants suited to the environmental conditions of the area, thus minimizing water consumption. The responses to this question were generally negative, as most respondents reported that these practices are applied to a moderate or small extent.



(10). Do you consider it important to implement policies which control energy waste?

In response to this question, all participants stated which they consider it very important to implement policies that control energy waste because students learn in practice what they are taught about the importance of energy conservation during their lessons. Many teachers emphasized that these practices are connected to students' everyday lives, helping them realize the practical significance of these actions.

(11). What do you think are the reasons which energy waste control policies are often not followed in school communities?

In response to this question, the majority of participants referred to mindsets and behaviors which are difficult to change, making it challenging to implement energy-saving practices in practice, even though they are aware of the environmental impact of such actions. Several teachers mentioned that financial constraints prevent the installation of systems that control or reduce energy consumption in school buildings, as the financial resources for school facilities are limited. Additionally, some participants pointed to the ignorance and lack of awareness among teachers as an important factor which makes it difficult to implement such policies, often leading to indifference among those involved.

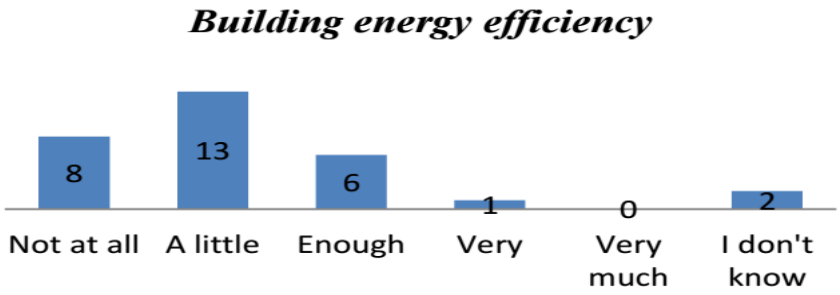
(12). Do you believe that, in addition to the desired outcome of reducing the environmental footprint of the school, there are other benefits, e.g., financial benefits, the adoption of these behaviors by students and teachers in their daily lives, etc.?

In response to this question, all participants mentioned that, aside from reducing the environmental footprint of the school, the implementation of policies which control energy waste would significantly contribute to the adoption of these practices by both students and teachers in their daily lives. Many respondents emphasized that it is particularly important for

students to adopt these practices, as they represent the future generation and their behavior is still highly adaptable, meaning they could easily carry these habits throughout their lives. Furthermore, several participants pointed out that the financial benefits of implementing policies which reduce energy waste are significant, as it would lead to a reduction in electricity and water consumption bills.

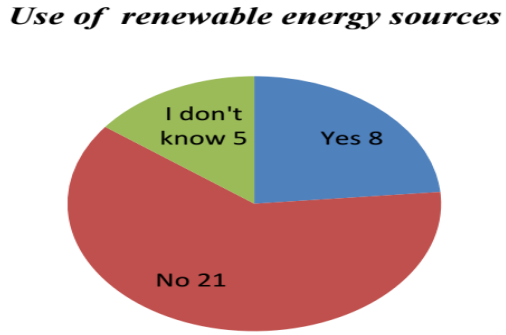
(13). Has your school building been constructed or renovated based on ecological design principles (LEED, etc.) to meet energy-saving specifications, e.g., insulation, etc.?

This question aimed to explore the energy efficiency of school buildings through appropriate ecological design practices, such as thermal insulation, the upgrading of windows with double or triple glazing, and the replacement of old heating and cooling systems. The answers to this question were discouraging, as most participants reported that the school buildings where they work do not meet such specifications, or only minimal repairs have been made in this direction, mostly concerning insulation. In addition, many mentioned that their school buildings are very old and need significant upgrades to achieve energy efficiency. A positive sign, however, was that some respondents reported that their schools have been included in building upgrade programs and that related interventions are planned for the near future.



(14). Are renewable energy sources used in your school, e.g., installation of solar panels on roofs, etc.?

The answers collected for this question were quite discouraging, as almost all participants mentioned that renewable energy sources are not used in the schools where they work. However, several participants highlighted that processes are underway to install solar panel systems on the roofs of the buildings and to utilize geothermal energy for power generation in the near future.



5. Conclusions

Energy and water conservation are imperative actions in modern society, as issues related to the depletion of non-renewable energy sources and water scarcity are increasingly exacerbated. Schools are places where energy and water conservation can be effectively implemented. Not only does this reduce the environmental footprint of these institutions, but it also cultivates environmentally-friendly behavior among their users.

From the data collected from our research, it can be concluded that primary education teachers and students are sensitive when environmental issues need to be taken into account. In particular, when possible, they adopt practices related to energy and water conservation, e.g. turning off electrical devices and lights, turning off taps to prevent water waste, and managing heating and cooling efficiently.

However, a negative aspect is that most school buildings are very old and do not meet energy efficiency standards, with a few exceptions, those mainly being thermal insulation and window upgrades to limit heat loss. At the same time, the findings regarding the use of renewable energy sources in school buildings are discouraging. In addition, the data on the installation of smart energy and water management solutions show that these are not implemented in Greek school buildings.

The negative findings regarding the use of new technologies and systems which enhance energy and water efficiency, as well as the energy upgrading of school buildings and the use of renewable energy sources, are undoubtedly linked to the lack of financial resources. Such practices require substantial funding, and considering that most Greek school buildings are very old, the cost of installing smart systems and ensuring the energy shielding of these buildings is quite high.

On the other hand, it is encouraging that many educators reported that their schools are included in programs related to the energy efficiency of buildings and the use of renewable energy sources, with relevant actions planned for the near future. Indeed, integrating school buildings into subsidized programs and funding tools from the European Union could be a practical solution that authorities responsible for school infrastructure should consider.

Moreover, there are practices which schools can implement without requiring financial resources, such as the prudent use of electrical devices, heating, and water, rainwater collection, the preference for natural lighting and ventilation, or practices which involve minimal cost, such as the use of LED bulbs and maintenance of plumbing systems. These practices can also yield significant long-term financial benefits, as their adoption can considerably reduce the operational costs of school units.

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Sustainable Development, Social Capital and Exploiting the Special Identity of a Region: A Case Study of the Municipality of Markopoulo Messogaia in East Attica

Abstract:
Sustainable development is achieved through utilization of social capital and the promotion of the distinctive identity of a region. In Mesogeia, Attica, the historical-political conditions were brought about the community formation by the emblematic agricultural cooperative of MARKO (1914). Its statutory objective was the public benefit for the community that consisted of the driving force of development for the area, current Municipality of Markopoulo. Following the large-scale development in the area of the El. Venizelos International Airport of Greece, many structural impacts took place affecting the rural communities in the region and the surrounding natural environment. As haphazard spatial "development" gained momentum to serve the new immediate needs for the global transport hub of the country. Local community co-productive system of the MARKO was radically transformed while other productive private enterprises seem to gain importance as the wine produced still defines the identity of the region.

Results of ongoing field research will be presented aiming at a definition of the distinctive identity of the region, in the context of sustainable development guidelines (SDGs) that need to be applied for the Community priorities. We will argue that a necessary factor for success in the implementation of sustainable development indicators is the achievement of social cohesion by developing the regional cultural capital engaging the working community, as in the past with the MARKO wine Cooperative. However, this complex endogenous development process represents a challenge for the Municipality of Markopoulo as it struggles with new actors in the area.

Keywords: sustainable integrated development, sustainable development indicators, social capital, public benefit

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1. Introduction

Defining the specific local 'identity' of the area is a crucial factor since it is linked to the cultural factor, which is a strategic parameter, and is part of local development planning. It also creates conditions of sustainability and added value for development in the area. The degradation of the environment and the space regulated for living, for creative activity and for leisure, are the product of the misuse of land and the speculative appreciation of its value, which in turn limit the ability to plan and control the uses and quality of space.

According to the European Commission (European Commission (COM (2010)2020 final)[3], smart or strategic growth is defined as growth of an economy based on knowledge and innovation. Smart enables managing the structures (infrastructure and superstructure) of a territorial economy, exploiting the surplus value created by the productivity of the labor factor, through lifelong learning and with the help of digital economy.

Regional policy today has ceased to be an exclusive, centrally planned, state policy that seeks to reduce regional disparities in the inequalities by helping the less developed regions. is difficult to calculate the effects of the policy, as it is not clear which is the most appropriate indicator to assess these effects (Barquero, 1991). The essence of the regional problem: existence of inequalities between regions (gaps) stems from the realization that the market mechanism does not automatically create regional equilibrium and regional inequalities observed over time between or within countries are identified by a set of multiple indicators (Koltsaras, 2012).

2. Local Environment

In the region of Eastern Attica, and specifically in Mesogeia, there has been a cultural human activity since antiquity. With the establishment of the new Greek State, the primary sector of the region and the cultural framework provided the conditions for a rural cooperative to be founded, which in 1914 was named MARKO and in the following decades became one of the first pillars of development of the region, while at the same time improving the quality of life of the inhabitants. The industrialization and urbanization in the following decades in the area, led to the reduction of employment in the primary sector and unmanageable population growth, resulting in the destruction of the local character and the natural environment, as well as the uncontrolled and unregulated development of infrastructure to serve immediate needs. New partnerships and innovations that emerged during the COVID-19 pandemic, including scientific collaboration and new datasets, should be scaled up to support the Sustainable Development Goals (SDGs). Science, technological innovations, and data analysis systems can help find solutions in times of crisis and contribute to addressing major contemporary challenges. These require increased and sustained investment in statistical capabilities, R&D, as well as training and skills development[4]. Technology and web may become a new source for social capital.

The case study concerns the implementation of the SDGs or other indicators in context with sustainable development in the region of Eastern Attica, specifically in the area of the Municipality of Markopoulou (and the wider area, including the area of Vravrona, i.e. the largest Natura2000 area in Eastern Attica) where the oldest cooperative of the region, the Association MARKO, established in 1914[5], is located, the oldest among the other four in the

[3] COM(2010) 2020 final, Europe 2020: A strategy for smart, sustainable and inclusive growth https://www.eea.europa.eu/policy-documents/com-2010-2020-europe-2020

[4] Global Plan to Finnce the UN Sustainable Development Goals Urgently Needed Says New SDSN Report, Press Release: 2022 Sustainable Development Report: https://www.sdgindex.org/static/news/press-release-sustainable-development-report-2022/SDR%202022%20-%20Press%20Release%20-%20English.pdf

[5] In 1900, with the "Share Agricultural Association" of Almyros, the beginning of the cooperative initiative in its modern form in Greece was established. Its Constitution was a reference for the creation of Law 602/1915 (Κλήμης, 1985). Law 5289/1931 may have resulted from the rapid development and spread of the cooperative system, with the expansion of agricultural production and the reduction of mortgage lending, with competitors

region: Agricultural Wine Cooperative of Kropias[6] , Agricultural Wine Cooperative of Peania[7], Vineyard Co. Spata[8].

The historical example of local self-sufficiency that Cooperation MARKO offered to the development of the local community through the production of wine products, translated into a public benefit, held the basis for self-sufficiency locally, also for future sustainable development, which means development in line with the environment and cultural heritage protection, also local rural heritage and economy, as there are a lot of archaeological sites, as the temple of Vravrona etc, also protected by law natura2000 area next to the airport and the cultivable land[9][10].

Since the agricultural land in Greece and its properties cannot support a large human resource, even in the largest rural areas that show an increase in the number of laborers, often self-employed, corresponds to a small number of employees and wage earners. Moreover, the contribution of the industrial sector exceeded that of the agricultural sector for the first time in 1960 and has only been increased since then, on a per capita basis. While we see from measurements that the contribution of agricultural income to gross national income is significant and the share of people employed in the agricultural sector is low, the rate of progress of agribusiness is declining compared to other activities (Lytras,2006).

Despite the above added value can be produced via implementation of City branding and place marketing, which are techniques for promoting cities, developing areas with the guaranteed participation of residents (Karavatzis & Ashworth 2005, Braun 2011, in Karachalis, Defner, 2012:88).

These strategies serve a range of interests, while interacting and representing distinct processes and functions at micro and macro scales, and it could be said that cities are the umbrella for all brands within the city and related to everyday life (Evans, 2014). There is however confusion about the meaning of the concepts and their implications for urban policy (Karachalis & Deffner, 2012). Rural history, local culture, local gastronomy in East Attica and wine more specifically for these territories are products that meet these descriptions of promotion and development plans. The fact that wine is a distinct product is related to its connection with antiquity and the ancient vineyard of Athens and in terms of marketing, wine has wide range of quality and cost.

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losing their gains. (Παπαγεωργίου, 2007). Law 921/1979 abolishes the partial incompatibility of political agro-cooperative action, followed by the laws of 1982 and 1985, with which the shift of the cooperatives' interest from economic success to political influence begins. (Iliopoulos, 2000) For instance, the subsequent laws 2008/1992, 2093/1992, 2198/1994, 2237/1994 and 2538/1997 (Παπαγεωργίου, 2007), while in the 2000s, just before the crisis erupted in all its intensity, the Kontou package emerged (2008).

[6] Agricultural Wine Cooperative of Koropi: https://hellenicwinery.gr/index.php/aos-koropiou/as-koropi-menu

[7] Agricultural Vineyard Cooperative of Peania: https://aaspaianias.gr/%cf%87%cf%81%ce%ae%cf%83%ce%b9%ce%bc%ce%b1-%ce%ad%ce%b3%ce%b3%cf%81%ce%b1%cf%86%ce%b1/

[8] Spata Vineyard Cooperative: http://ampelourgikospaton.weebly.com/iotasigmatauomicronrhoiotaalpha.html

[9](GR3000004 «Βραυρώνα – Παράκτια θαλάσσια Ζώνη») σύμφωνα με την Οδηγία 92/43/ΕΟΚ. Ισχύουν οι Χρήσεις Γης & Όροι και Περιορισμοί Δόμησης Ευρύτερης περιοχής Μεσογείων του ΦΕΚ 199/Δ/6-3-2003. Λόγω του ιδιαίτερου αρχαιολογικού ενδιαφέροντος της περιοχής, στους κηρυγμένους αρχαιολογικούς χώρους υπάρχουν ζώνες πλήρους απαγόρευσης δόμησης (ΦΕΚ 198Β/213-1995). Ειδικοί όροι και περιορισμοί δόμησης θεσπίζονται στον αρχαιολογικό χώρο Βραυρώνας Μαρκοπούλου Μεσογαίας (ΦΕΚ 718Δ/27.12.1979). Τμήμα της Βραυρώνας έχει χαρακτηριστεί ως Ζώνη Οικιστικού Ελέγχου (ΖΟΕ) (ΦΕΚ 456/24-4-1985). Το Παράκτιο Έλος Βραυρώνας βάσει του νέου ΡΣΑ (ΦΕΚ 156/Α/1-8-2014) εντάσσεται στο ειδικό πρόγραμμα, ως Α΄ Προτεραιότητας, για οριοθέτηση, εκπόνηση μελετών, χρηματοδότηση δράσεων και έργων προστασίας, αποκατάστασης, ανάδειξης και διαχείρισης. Εκκρεμεί η θεσμική οριοθέτηση του Παράκτιου Έλους Βραυρώνας σύμφωνα με όσα ορίζονται στον νόμο περί βιοποικιλότητας (Ν. 3937/2011, άρθρα 13 και 20)

[10] «Επικαιροποίηση της Βάσης Δεδομένων του Νατούρα 2000-Μάϊος 2011», πληροφορίες: (http://www.ypeka.gr & Τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας καταγράφονται στο σχετικό έγγραφο (http://www.ypeka.gr).

Based on this theoretical framework, research was carried out in 202 in the area of the Municipality of Markopoulo, where the MARKO cooperative used to be located. The research was published in 2021 under the title Markopoulo Mesogaia, MARKO – The customary common good in Attica and the pendulum of sustainable development. The same research was also published in Sustaining Communities: prospects and challenges (Methenity & Tsobanoglou 2022).

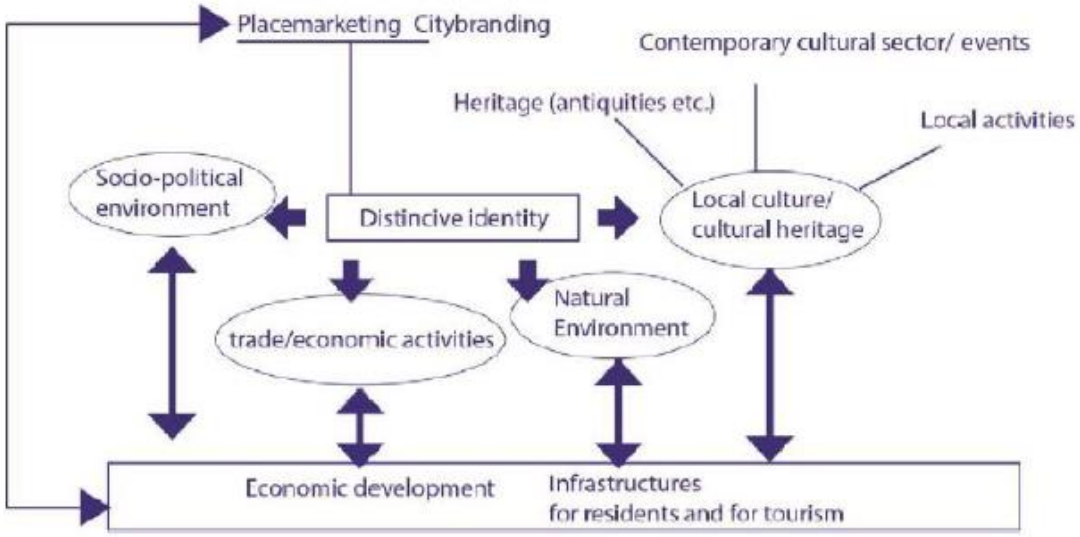

Figure 1: Local distinctive identity and citybranding/placemarketing

The Marko Coop, in retrospect, even as cultural heritage brand, was successful in wine production, even exporting, Nowadays, Kourtaki's Wine Company[11] sustained itself through ingenuity by promoting globally a distinctive product, that of Retsina Brand, the Classical brand of Attica wine.

3. Cooperation Model and Social Capital

Co-operation as a model is an economic necessity today. The small size of the Greek primary sector usually leads to a business model that is mainly addressed to the internal market. The dysfunction affects the whole value chain, including manufacturing and the tertiary sector, where, in combination with the lack of adoption of national strategic planning, along with global market competition and with the internal " informal" black economy being expanded, creates a difficult internal environment for the development of the sector and entry into international markets.

Social cohesion, is inseparably linked to the concept of social capital, as social capital is what is related to the value of social networks, which unites similar people or even creates bridges between different people, with rules of reciprocity (Dekker & Uslaner 2001, Uslaner 2001)[12]

Social capital functions as a surplus value available to individuals or groups, and forms the basis in the structure and content of agents' social relations, and the effects derive

[11] Winesof Greece:https://winesofgreece.org/el/wineries/%CE%B5%CE%BB%CE%BB%CE%B7%CE%BD%CE%B9%CE%BA%CE%AC-%CE%BA%CE%B5%CE%BB%CE%BB%CE%AC%CF%81%CE%B9%CE%B1-%CE%BF%CE%AF%CE%BD%CF%89%CE%BD-%CE%BC%CE%B1%CF%81%CE%BA%CF%8C%CF%80%CE%BF%CF%85%CE%BB%CE%BF/

[12] Institute for Social Capital, Definition of Social Capital: https://www.socialcapitalresearch.com/literature/definition

from the information, influence and solidarity available to stakeholders (Adler and Kwon 2002, p. 23)[13]

In his book Making Democracy Work, Robert D. Putnam (1993) argues that (i) northern Italy has been developing faster than southern Italy because in the former case social capital was better established. Also (ii) the gifts of social capital throughout Italy have survived for centuries. In an empirical exploration of Putnam's hypothesis, studies evaluate and explore the relevance of social capital and issues of worker productivity, entrepreneurship, female labor market participation, access to higher education, etc. By exploiting regional differences in civic participation in the late twentieth century as a means to current social capital, the importance of social capital in economic activity is demonstrated. More specifically, the local political regimes in the medieval period shaped the degree of local civic engagement that ultimately persisted across the centuries (Blasio & Nuzzo, 2004).

Cooperatives as actors in the social economy are by nature both a business and a social group (Draheim, 1952; Iliopoulos and Valentinov, 2017), combining economic efficiency with social sensitivity (Gupta, 2014; Mazzarol et al, 2014) they create social capital and lay the foundations for social innovation , (Novkovic, 2008; Birchall, 2011) promoting values such as democracy, equality and social justice more than other forms of business (Puusa et al., 2013; Davis, 2016) (Dianoesis, 2019).

Despite the longstanding presence throughout the world, their visibility in national statistics is still weak in many countries. Part of the reason for this has been the absence of a harmonized statistical definition and a common classification of cooperatives, while efforts have been made through the International Labor Organization to create data-based guidelines and statistics, as it appears that the statistics of many countries are not reliable, consistent, and comparable (Galhardi 2015).

In this aspect, members join a cooperative to benefit from their use of or transactions with it. This benefit comes for example from maximizing the value of members' products, services, or savings (members are suppliers of the cooperative's inputs), maximizing members' employment and working conditions (members are employees of the cooperative), minimizing the costs of intermediation for products, services or loans from members who are consumers or customers of the cooperative's outputs.

In this way, the availability and risk reduction for the member-users of the maintained managed resources or assets such as equipment, machinery or network platforms is ensured in the context of achieving the purpose of the cooperative, which is also valued in economic terms, through democratic governance. In an attempt to classify cooperatives, cooperatives arise as co-op, producer co-op, worker co-op, consumer-user co-op, multi-stakeholder co-op (Coop Statistic ILO gr.)

In the area of East Attica apart for private rural activities, firms, and entrepreneurs, varied from self-employment to successful businesses, there are rural cooperatives that handle agricultural trade, such as wine and grape derivatives, figs, pistachio, tomatoes, olive oil, some of which have established well known official or unofficial brands and products of protected geographical indication. The foundation overall is Mediterranean diet, well known and important for its health benefit. The profit from agribusiness is small, and hard to gain as already mentioned, cooperative practice is a solution for saving labor energy and maximizing profit.

According to the database of the Ministry of Rural Development, the cooperatives in the "Mesogeia" region are: Agricultural Floriculture Cooperative of Nurserymen of Acharnai[14], Agricultural Coop of Kapandriti[15], Agricultural coop of Marathon[16], Agricultural

[13]Ibid

[14] https://www.synfat.com/index.php/el/

[15] https://www.aetoitoncafe.eu/profile-39145-agrotikos-sinetairismos-kapandritiou

Coop of Markopoulo[17], Agricultural Coop of Paiania[18], Sectoral Agricultural Coop of Acharnai. Some of those are specialized in specific products such as wine and these are Wine Cooperative in Koropi[19], Vineyard Coop of Spata[20], Vineyard Coop of Paiania[21], MARKO Coop in Markopoulo[22] and also Affiliation of Wine Producing Cooperatives of Eastern Attica[23]. As for the private sector in the field there are 41 private wineries, 2 of those located in the protected area of Vravrona and a lot of retail market traders.

A second assumption related to cooperatives is that if there is a factor of strong social capital in a local community, then the cooperative can turn it into economic value, since justified trust is a key feature of social capital and the success of a cooperative. And vice versa, of course. There can also be a feedback process. The cooperative forms social capital, and this comes back to it in the form of effective operation and development[24].

In line with the literature and with the aim of applying the indicators required for participation, collaboration and inclusiveness, the basic principles of the collaborative and social economy are described.

The past example of the case of Coop - MARKO is an example of the application of this 'agreement' in the context of the then Community principles.

In the survey, conducted in 2020 on the city branding of the region Municipality of Markopoulo over 100 visitors and permanent residents, over the age of 18, answered to the question "Which economic activity do you consider most important for the region". What was of particular interest, where 40.4% answered the agricultural economy and 39.9% answered tourism, referring to "holiday tourism" (see Figure 1) (Tsobanoglou et.al.2021, 2022).

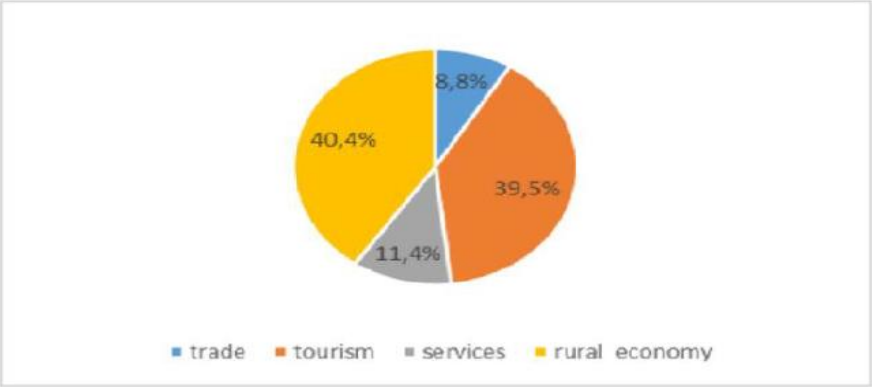

Figure 1 Question: Which economic activity is most important for the city?

As a conclusion we could say that the area is known for its rural profile and this creates factors of a specific “brand” identity, in some cases as in Vravrona this is based firmly in cultural heritage, in addition to environmental importance.

The survey gives us some indicators regarding the desired branding that ought to be promoted by local authorities in the region. Most of the participants seem to define the branding for the area, its rural wine culture and its leisure prospects by the costal area. The MARKO coop’s physical infrastructure, wine fields, have been turned into other commercial

[16] https://goldenpage.gr/el/agrotikos-synetairismos-marathona-georgika-efodia-lipasmata-fytofarmaka-marathonas-bousoulas-vaggeli
[17] https://agrotikossynetairismosmarkopoulou.wordpress.com/
[18] http://agrsynpea.gr/
[19] https://www.hellenicwinery.gr/
[20] https://ampelourgikospaton.weebly.com/
[21] https://aaspaianias.gr/
[22] https://wineillusion.gr/synetairismos-marko/
[23] https://www.keosoe.gr/
[24] https://www.e-pepba.gr/sites/default/files/2020-

usages as their value has been augmented due to its strategic location. While the cooperation is no longer the engine for local production, private firms and wine estates seem to gain importance. Coordination of private sector to achieve local tourist development and considering a place branding based on wine tourism, enhancing a wine museum and activities based on wine is a step needed to be made (Tsobanoglou et al., 2021, 2022)

4. Factors and Forces

Social capital, as captured in cooperative life and political participation indicators, is explored and is shown to be the most important single determinant of different levels of socio-economic development in the regions in the Italian example. "A region's chances of achieving socio-economic development during this century depended less on its initial socio-economic endowments than on its urban endowments. The modern correlation between citizens and the economy primarily reflects the impact of citizens on the economy, not the other way around" (Putnam (1993): 157 in Blasio & Nuzzo, 2003).

The role of social entrepreneurship is important. Social entrepreneurs seek to create systemic change and sustainable improvements. Although they can act locally, their actions have the potential to raise global improvements in their chosen arenas, whether it is education, healthcare, economic development, the environment, the arts, or any other social sector (Korres, 2015: Voulgaris, 2022)

The role of SDGs is under research and their relationship with macroeconomic indicators such as GDP, which do not account for the damage caused by economic growth per se and the increase in these values is calculated as a measure of "progress and prosperity" (Coscieme et al., 2019; Fioramonti et al., 2019; Costanza et al., 2014b, c; Kubiszewski et al, 2013; Jackson, 2009). In the context of the SDG indicators, the use of GDP to measure sustainable economic growth brings about significant divergences between efforts to achieve SDG 8 ("Decent Work and Economic Growth"), respectively, and other targets, thus significantly hampering coherence (Spaiser et al., 2017) (Coscieme et al., 2020).

5. Concluding Remarks

However, ultimately, sustainable or viable development is not a stable state of harmony, but rather a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional change are consistent with both future and present needs. [25]

Overpopulation and the immediate needs for infrastructure create problems in the area. Solutions can be found while aiming at economic development alongside social and cultural development, with support from private and public sector. Primary sector can be considered as cultural heritage also the environmental damage led to degradation of the landscape and the space organized for life, as for the speculative use of environment, in turn limits the ability to plan and control land used and quality of space. The SDGs role is under research, also the connection with macroeconomic indicator such as GDP, which do not account for the damage caused by economic growth and the so-called values calculated as measure of “progress and prosperity”.

The SDGS’Ss require community alliances as in the MARKO then and in many other current coops in Greece. Can we realign community productive capacity under a cultural mediation condition in promote local productive wine capacity as the emblematic produce of the area. In this sense we need to emphasize the importance of territory in uniting private and public economic forms under the concept of general community interest.

[25] Report of the World Commission on Environment and Development: Our Common Future: https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

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Tourism Destination Management: Comparative view of Greece and Italy (Tuscany)

Abstract:
The management of a tourism destination plays an important role for its further shaping at national, regional, and local level and includes planning, promotion, and balance (social-environmental-economic). Special emphasis is given to the design by identifying the aims, objectives, organizations involved, and the alternatives provided. The destination management plan can ensure a robust tourism industry and contribute to a sustainable economic, social, and cultural future. It is based on the beneficial balance between the interests of locals, businessmen, visitors, and the environment. Greece and Italy as countries have attractive tourism destinations that stand out for the implementation of their specific policies in terms of their management and planning. Their design optimizes the consequences and activities of the tourism sector and aims at the development of services and facilities, giving them a complete tourism identity. This organizational effort is flexible in decisions and manages the product. It also systematically monitors changes in market trends, competition, and good international practices with new modern tools.

The purpose of this research is to examine in detail as case studies Greece and Italy (Tuscany) that focus on the development of a destination through the contribution of destination management systems (DMS) and destination management organizations (DMO). Also, the present research aims to highlight these destinations by promoting their cultural stock, their gastronomic culture, their innovative products/services, and their competitive tourism identity through technology. Qualitative and quantitative data will be used through the collection of secondary data for Greece and Italy (Tuscany). Research questions related to the trend of utilization of DMS and DMO systems, utilization of special and alternative forms of tourism and ensuring a framework for sustainable tourism development will be answered. At the end of the research, it is possible to evaluate and control the data. This is achieved by presenting the internal environment with the main strengths and opportunities of the management of the tourism destinations under consideration, as well as with the weaknesses and threats that affect the management of the tourism destinations of Greece and Italy. In conclusion, these destinations become more competitive with the operation of the DMO organization, as they provide additional incentives for tourists to visit them. In addition, their tourism activity creates the appropriate conditions for sustainable development, setting an example to other destinations for the creation of respective organizations to upgrade the Greek and Italian tourism product.

Keywords: Tourism destination; management; DMS; DMO; Greece; Italy; Tuscany.

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1. Introduction

The rapid development that has occurred in recent years in information and communication technologies has raised many questions about how a tourism destination can be promoted and successfully shape travel planning (Bilgihan, Barreda, Okumus, Nusair, 2016). As it is well known, DMO provides and promotes information (Wang, Fesenmaier, 2006) and takes care of the management and advertising level of Marketing of a specific tourism destination (World Tourism Organization, 2007). DMO creates internet marketing communication for a country, building a relationship of trust between visitors and selected tourism destinations (Li, Robinson, Oriade, 2017).

At the same time, through the utilization of destination management systems, reservations, and purchases of various services by the visitors of a tourism destination in a short period of time (Li, Wang, 2010). High-speed and advanced technological methods are used to support new telecommunications networks (Buhalis, 2002) evolving the level of cooperation between the stakeholders and DMO (Bédard, Louillet, 2011). This is a very good communication framework between suppliers and consumers, which is regulated internally and promoted responsibly by DMO in the effort to promote the respective tourism destinations (Buhalis, 2002).

The usefulness of the destination management organization is particularly important as it is a public and private stakeholder whose main concern is to implement a marketing policy for the development of a tourism area in a coordinated way through its design (ANT-National Tourism Authority, 2017). DMO implements and has a variety of management services (Foris D, Florescu, Foris T, Barabas, 2020) that make it effective in its purpose with specific types of e-marketing (Darbandi Houshyar, 2018).

At the same time, they maintain the tourism destination viable in the market area in the long run (Pike, 2014) reducing the cost of sales since an intermediary is employed to promote the available services (Bennett, 1999). Reliable tools help to shape the image of a destination such as the official internet platforms (Molinillo, Cabanillas, Sánchez, Buhalis, 2018) aiming to obtain the image of a smart tourism destination with the main purpose of creating and disseminating data and knowledge (Sheehan, Vargas Sánchez, Presenza, Abbate, 2016). DMSs become the basis of information data for a DMO, a network of collaborators with visitors to a tourism destination (Li, Wang, 2010). It is difficult to explain conceptually using the international references how it differs from a DMO platform (Locatelli, 2016) that helps to plan a trip with guest bookings (Buhalis, Law, 2008).

2. Literature Review

Destination management organizations are also known as TPA destination promotion agencies that have been established worldwide since the 1950s in Pennsylvania and several studies have reported on their history (Douds, Grubb, Michaels, 2021). They currently use Web 2.0 platforms with useful applications for creating and promoting a destination image and they are a very important strategy for understanding the offer of social media in the tourism market (Inversini, Buhalis, 2009). At the same time, visitors are given the opportunity to know the desires and needs for the consumption of the products/services they will choose for their final consumption (Ndou, Del Vecchio, 2014).

The existence of collaborative networks provides an important opportunity for tourism operators in a destination to gain a significant competitive advantage in an increasingly aggressive global market (ACM/IEEE International Conference on Web Information Systems Engineering, Main Program), 2000). The special and alternative forms of tourism are presented in the best way to the visitor (Folgado, Hernandez, Duarte, 2017). The governance of each destination aims to balance the various requirements at local, regional, and state level (Dianne, Tazim, 2014).

DMO management provides the opportunity to examine key KPI performance indicators with clarity, presenting the results of targeted marketing interventions (Morgan, Hastings, Pritchard, 2012). Travel agencies can promote their services with the contribution of DMOs in collaboration with other travel agents, having a database such as DMS that includes travel information, especially important for the future visitor (Mak, 2017). The visitor can participate as a "creative tourist" by experiencing specific (Florida, 2002).

There is a need to apply basic concepts of marketing when choosing an organization to use online media and digital technology methodologies (Mahmutović, 2018). Through the appropriate practice of collective networks in a destination or a tourism community, best practices should be applied to meet the needs of travelers (Akoumianakis, Vidakis, Akrivos, Milolidakis, Kotsalis, Vessis, 2011).

Previous research has emphasized that the synergy between public and private stakeholders is an important component of a tourism destination (Everett, Slocum, 2013). At the same time, the use of the internet and ICT have radically changed most of the economy of a destination by creating new business models and shaping its revenue stream (Sivasankaran, 2017). DMO uses the internet, like the tourism industry, to gain a competitive edge. It must develop its technology and proceed with the application of various techniques that will attract tourists/customers (Gunjan, 2019).

The contribution of various organizations and stakeholders regarding the interconnection of tourism supply and demand is examined (Pearce, 2015). DMO has a special role in regulating the financial, cognitive, and human resources that are key factors for a destination of tourism to achieve a successful competitive course in a sustainable way (Bornhorst, Ritchie, Sheehan, 2010). It has been found that informing visitors through its digital platforms is necessary as a large flow of information is needed (Ritchie, Crouch, 2003) for the selection of the specific tourist destination.

DMO and DMS deal with the management of the destination's reputation, the process of organizing the destination and how to promote it through the regulation of the public and private sector in this direction (Volgger, Pechlaner, 2014). E-commerce brings growth in a variety of ways such as offering new opportunities to create further diverse services and goods, evolving in-house efficiency, and enabling businesses to enter the market globally (Shanker, 2008).

DMOs are deemed necessary to acquire the role of a leader within the coordinating part of a tourism destination and to devise a specific tourism development strategy they will devise although on a regional and local basis (Hall, Page, 2003). DMS are the most important tools to build and promote the image of a destination through their official online platforms (Molinillo, Cabanillas, Sánchez, Buhalis, 2018), (Estêvão, Carneiro, Teixeira, 2020). The purpose of the DMS should be emphasized by providing functions that will mutually influence a tourism destination between a variety of business entities with attractions (Buhalis, 2003).

3. Comparative view of Greece and Italy (Tuscany)

3.1 Case Study of Greece

Greece as a tourism destination is promoted through its own organization, Greek National Tourism Organization, under the supervision of the Greek Ministry of Tourism. Its first establishment was in 1929 under the supervision of the Ministry of Economy (http://www.gnto.gov.gr/el/history/1930). The special heritage of Greece is promoted by the Greek National Tourism Organization. The Greek Ministry of Tourism draws up the tourism policy, outlines the specifications that companies of alternative forms of tourism will have and provides the possibility of granting a special mark to wineries that welcome visitors (https://insete.gr/wp-content/uploads/2020/04/Gastronomy_full.pdf). In recent years, the need to set up destination management organizations in line with European standards to promote

specific and alternative forms of tourism has come to the fore. There is a need to establish these organizations in Greece with the most recent example of the effort to institutionalize them in accordance with Law 4674/2020, Government Gazette A '53/11-03 2020 (https://www.hellenicparliament.gr).

The strategic planning of the Greek National Tourism Organization is based on the enrichment of the upgrade of the main product of its tourism sector such as the "sun and sea", strengthening destinations by adding thematic authentic experiences. The main mission of the Greek National Tourism Organization is to extend the tourism season 365 days a year, highlighting new destinations in collaboration with both decentralized administrations and local entrepreneurship. It has destination management systems using its own digital platform such as http://www.gnto.gov.gr and offers the visitor a tool of the latest digital technology, "Visit Greece" (https://www.visitgreece.gr). The visitor can choose various experiences/activities, such as entertainment, gastronomy, culture, nature, etc. (https://www.visitgreece.gr/el/experiences/gastronomy/).

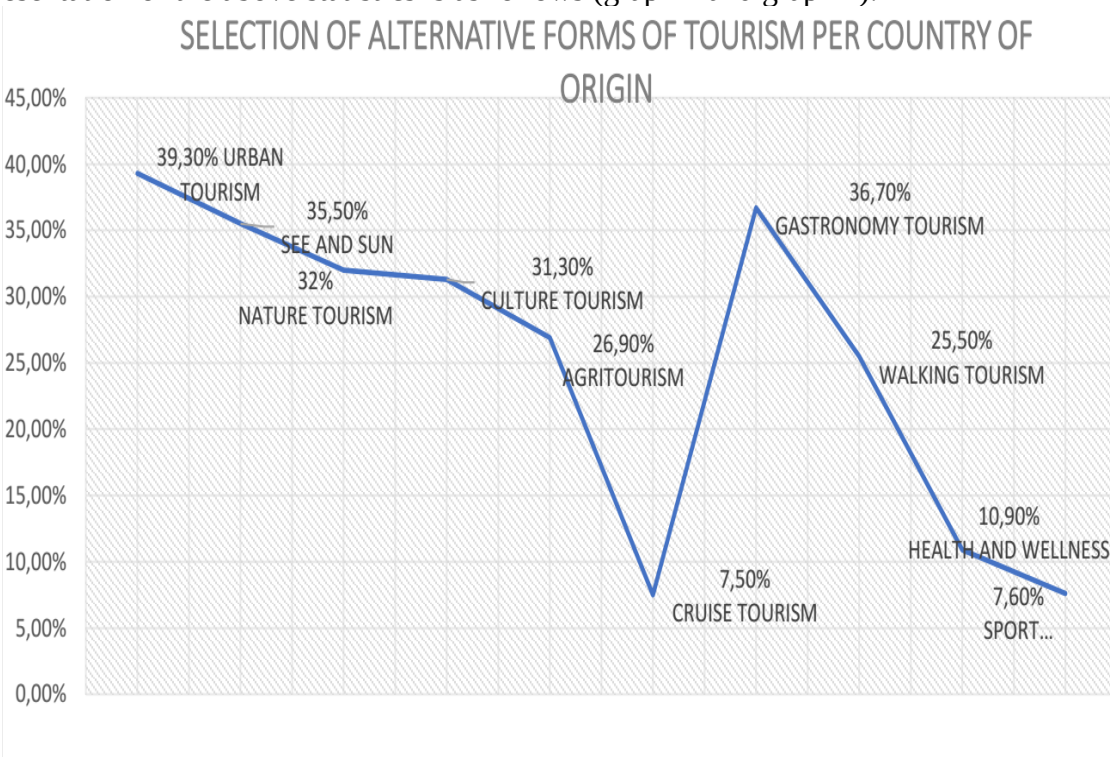
Despite the advertisement made by the Greek National Tourism Organization and its desire to create a network of cooperation with DMO's, travel agencies abroad, in Greek tourism companies and travel agencies (https://www.visitgreece.gr/el/experiences/gastronomy/) a significant gap is detected. This gap concerns the interconnection of the agri-food sector and tourism, which is particularly key to the further promotion of gastronomic tourism. It is necessary to implement a strategic plan at national level that will provide the stimulus at the cooperative level of the Greek Ministry of Rural Development and Food with other relevant ministries that will undertake the promotion of agricultural products by strengthening tourism and culture. There is no strategic planning at national level that includes the systematic interconnection of the agri-food sector with tourism and culture (https://insete.gr/wp-content/uploads/2020/04/Gastronomy_full.pdf). The Greek National Tourism Organization in its effort to fill this gap has created an innovative digital map that enables the promotion of alternative forms of tourism (https://mintour.gov.gr/wp-content/uploads/2021/02/Gastronomikos.pdf).

The example of gastronomic tourism in Greece is typical as other alternative forms of tourism are combined with it, such as cultural tourism, agritourism, hiking tourism, etc. In this context, using innovative digital systems (https://mintour.gov.gr/wp-content/uploads/2021/02/Gastronomikos.pdf) such as its digital gastronomic map, the Greek National Tourism Organization sets a development policy that aims to create culinary culture routes. The specific events reach 79% in percentage, followed by the cultural routes with 62%, the local experiential workshops with 62% and the visits to local producers, winery, restaurants with 53% (https://mintour.gov.gr/wp-content/uploads/2021/02/ Gastronomikos.pdf). The local products and the participatory activity of the visitor in alternative forms of tourism are displayed.

The strategic planning of the Greek National Tourism Organization on alternative forms of tourism is based on various thematic axes of communication such as sun and sea, luxury tourism, religious tourism, gastronomic tourism, diving tourism, conference tourism, urban tourism, travel tourism, maritime tourism and health and wellness tourism (http://www.gnto.gov.gr/sites/default/files/files_basic_pages/ stratigiki_eot_2014-2016.pdf).

The planning is based on basic axes through its digital platforms to expand into new markets and strengthen existing ones that are in the process of maturing. It wants to increase the dynamics of the city break in new destinations as well as in more popular areas such as Athens and Thessaloniki, to upgrade and improve the main tourism product of Greece, such as the "sun and sea" while maintaining and strengthening to a greater extent the location of destination. Also, to promote internationally the Greek tourism brand name and to extend the tourism season by differentiating the tourism destinations with experiential thematic experiences (http://www.gnto.gov.gr/el/STRATEGY).

According to the data of Association of Greek Tourism Enterprises, (https://sete.gr), it is found that regarding the promotion of alternative forms of tourism at European level, all visitors (by country of origin) choose to visit the cities/local urban life, with the urban tourism to reach a percentage of 39.3%. Poland holds the largest percentage with 52.8%, choosing the "sun and sea" dipole. Austria with 54.7% chooses to visit places in nature. The Czech Republic with 44.3% chooses to visit museums, monuments, cultural activities with cultural tourism reaching 31.3%. Italy with 43.7 chooses to visit small towns/villages inland with agritourism reaching a percentage of 26.9%. Belgium and Luxembourg with 50.1% choose organized cruise with cruise tourism reaching 7.5%. Finland with 12.6% chooses to enjoy gastronomic and wine tourism with a percentage of 36.7%. Norway with 61% chooses to enjoy shopping and walking tourism. Denmark with 42% chooses personal care, health, and beauty. Sweden with 26% chooses to participate in sports and France with 12.2% (https://insete.gr/wp-content/uploads/2021/03/21-03_Reputation.pdf). The statistical representation of the above statistics is as follows (graph 1 and graph 2):



Graph 1: The selection of alternative forms of tourism by country of origin. (Source: Adapted from the research study). Source: Extraction of statistical data from: https://insete.gr/wp-content/uploads/2021/03/21-03_Reputation.pdf

3.2 Case Study of Italy (Tuscany)

The region of Tuscany is an internationally and nationally popular tourism destination with around 11 million arrivals. The 1/3 are visitors from abroad with a strong interest in the seaside area and art (https://www.regione.toscana.it/documents/10180/13823115/InvestInTuscanyDoingBusiness-2016-7-18.pdf/6938fd24-3ca7-4cb6-9bdd-ee707f3efaea).

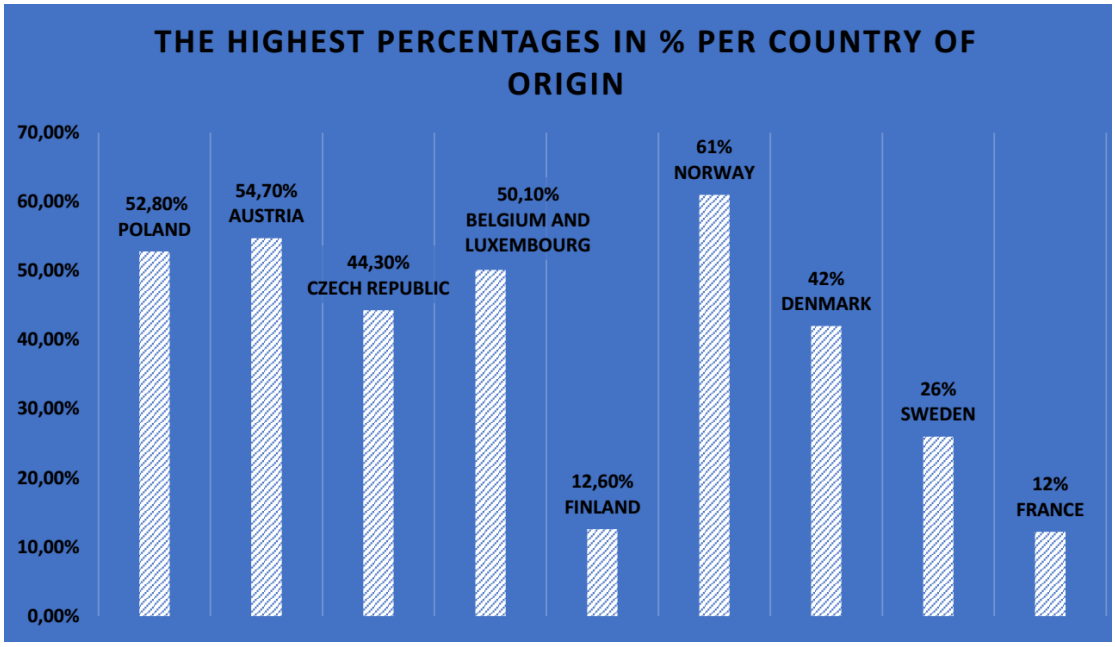
This region has its own DMO, the Toscana Promozione Turistica, which is subsidized by the central government, regulates its legislation on the management of alternative forms of tourism since the 1980s, promotes and strengthens the Tuscan tourism sector (http://www.toscanapromozione.it/content/2/Agenzia-Regionale-Di-Promozione-Turistica). Toscana Promozione Turistica strategically plans together with the Regional Tourism Observatory to promote alternative forms of tourism with emphasis on enhancing

competitiveness, informing stakeholders, cooperating with international markets, and scheduling operations (http://www.toscanapromozione.it/).

Toscana Promozione Turistica has held this position for over 10 years through the digital systems of the Fondazione Sistema Toscana and uses an integrated regional multimedia system (https://www.comune.montepulciano.si.it/images/homeallegati /2020homeallegati/TUR_LineTi_. pdf). Services and events are promoted online through digital communication. Strategic marketing planning at regional level is based on promoting the local offer of the tourism sector. It develops tourism products, promotes good practices that appear locally (http://www.toscanapromozione.it/content/12/Destination-Marketing) and has an active role in events and B2B and B2C trade fairs (http: //www.toscanapromozione.it/content/10/Promozione-Turistica). Through its digital systems and specifically in collaboration with the Fondazione Sistema Toscana, it promotes important activities, such as leisure travel by the sea, smart work, exploring cities with a long history of art, such as Florence, etc. It also promotes alternative forms of tourism, local culture (http://www.toscanapromozione.it/uploads/documenti/ Delibera_n.275_del_22-03-2021-Allegato-A.pdf).

According to the strategic planning of 2021, the new digital platform is based on the participation of 240 municipalities and their grouping in 28 tourism areas to promote their local products (http://www.toscanapromozione.it/uploads/documenti/ Delibera_n.275_del_22-03-2021-Allegato-A.pdf). The vision of the platform is based on the synergy of local public and private stakeholders following a long-term model of sustainable development that will bring prosperity in economic and social level by supporting participation for a sustainable tourism development. The aim is to promote the Tuscan way of life, to diversify the content of its services, to focus on the content of the thematic activities of its visitors and to ensure that the Tuscan brand name is kept at the highest quality level with innovative practices (https ://toscananelcuore.it/wp-content/uploads/2021/02/e3_DOC_Piano-Operativo-2021-Toscana-Promozione-Turistica1.pdf).

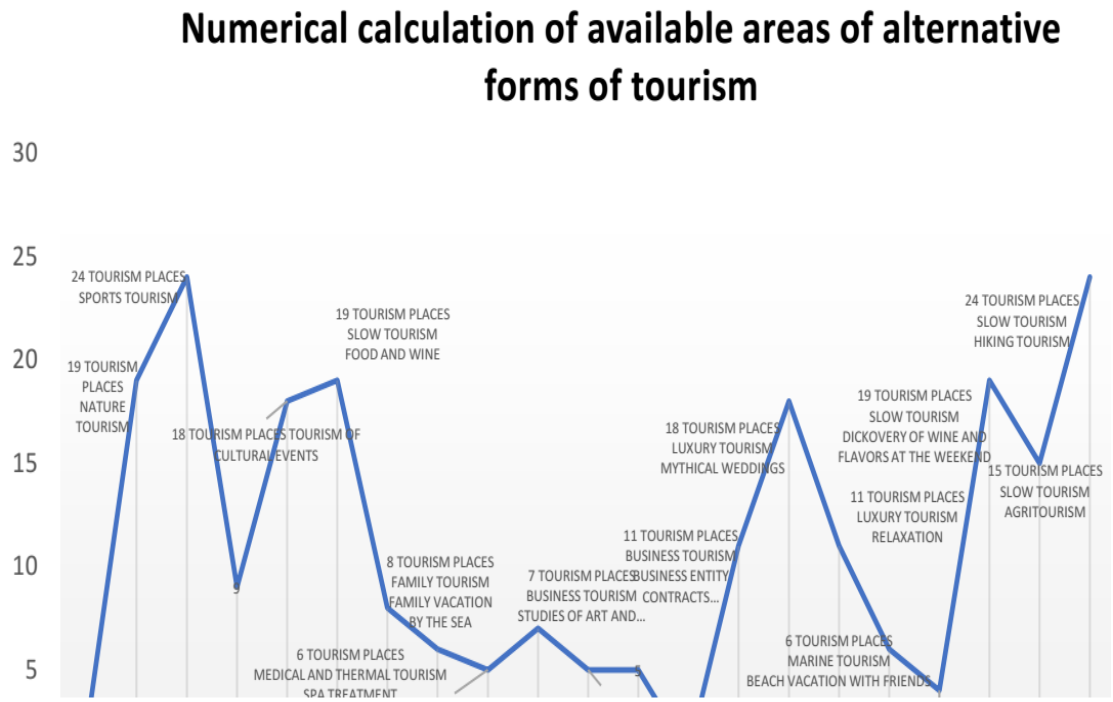
The program "Renaissance without end" advertises thematic contents of the region each destination informing visitors and operators in Tuscany with “Buy Tourism Online” and events (https://toscananelcuore.it/wp-content/uploads/2021/02/e3_DOC_Piano-Operativo-2021-Toscana-Promozione-Turistica1.pdf)(https://www.toscana-notizie.it/documents/735693/1421823/Destinazione+Toscana+2020+documento+strategico/b3c60138-69ac-4dd7-9803_-76b7ac3cc0c6). This program for the promotion of alternative forms of tourism at B2B level uses a co-branding strategy by attaching a strategic alliance with many brands and co-marketing by cooperating with different distribution channels.



Graph 2: Highest percentages in % by country of origin (Source: Adapted from research study). Source: Extraction of statistical data from https://insete.gr/wp-content/uploads/2021/03/21-03_Reputation.pdf

At the B2C level, it communicates with visitors through partnerships with digital platforms, network operators, destination management systems, familiarization trips, educational tours, communication events, workshops, exhibitions, maximizing competitive growth and sustainable development of Tuscany (https://www.comune.montepulciano.si.it/images/homeallegati/2020homeallegati/TUR_Linee guida_per_ambiti_e_PTO.pdf). This DMO follows the above regional strategy and assumes a major role through its digital systems, which manages the Tuscan promotion system. It has a coordinating role in the supply chain with the synergy of public and private stakeholders to select the appropriate markets and to promote the portfolio of the tourism destination https://toscananelcuore.it/wp-content/uploads/2021/02/e3_Orat_ -Tuscany-Promozione-Turistica1.pdf.

The organization of its portfolio includes the alternative forms of tourism in eight pillars of configuration of services offered and focuses on two axes as stated in the strategic plan of 2021 with its "product lines" and "product areas". They play an important role in promoting its tourism destination and in informing the DMO and DMS about the interests that visitors can find (https://toscananelcuore.it/wp-content/uploads/2021/02/e3_DOC_Piano-Operativo-2021-Tuscany-Promozione-Turistica1.pdf). Eight pillars are presented with emphasis on special and alternative forms of tourism. (1) Winter, nature and sports tourism, (2) City Break, cultural tourism, (3) Family and marine tourism, (4) Business, conference, exhibition tourism, incentive tourism (5) Luxury tourism, (6) Medical tourism, wellness tourism, (7) Religious tourism, (8) Slow tourism, agritourism, hiking, gastronomic tourism.



Graph 3: Numerical calculation of available areas of alternative forms of tourism (Source: Aadapted from the research study. Extraction of statistical data from: https://toscananelcuore.it/wp-content/uploads/2021/02/e3_DOC_Piano-Operativo-2021-Toscana-Promozione-Turistica1.pdf

The present qualitative and quantitative analysis in the case of Tuscany outlines the size of the areas numerically that have the alternative forms, where it is found that hiking and sports tourism is flourishing, with 24 sites supporting this form and is an important proof that a DMO with an advanced DMS can reach the strategic planning of any alternative form that can meet the most demanding wishes of a visitor and a significant advertising privilege for the respective destination that supports it (graph 3).

4. Methodological Framework of Research

The present research was carried out through secondary sources for two popular tourism destinations, Greece, and Italy. The development prospects of the two countries are examined in terms of the creation or the existence of a DMO that contributes to the further promotion of the image of specific destinations. Strengths, weaknesses, opportunities, and threats related to their management systems are identified, secondary data are analyzed and at the end a comparative analysis is performed between them. The extraction of these data was based on the statistical data of Association of Greek Tourism Enterprises, Greek National Tourism Organization, the websites of the two countries and the Tuscany Destination Management Organization. The conclusions will contribute important information in the international references emphasizing the usefulness of this system for the development of tourism. They lay the groundwork for the prospect of creating a DMO and for tourism destinations interested in pursuing a similar utilization of these systems.

4.1 A SWOT Analysis

The SWOT analysis stage highlights the strengths and weaknesses regarding the Italian DMO and the Greek destination management organization, GNTO. Their opportunities and threats are also being investigated.

A SWOT Analysis for Greece
Strengths:
In the case of Greece, it is found that GNTO through its digital platforms advertises the high quality of the services offered at the destination. It emphasizes the great cultural and environmental reserve of Greece together with the "sun and sea" that becomes the largest market in the tourism sector in Europe. "Visit Greece" is a very typical advertising campaign and its digital videos such as the production of a documentary with the motto "The Greek Summer State of Mind" (https://www.visitgreece.gr/el/culture/welcome_to_the_new_visit_greece_youtube_channel), (https://www.marketinggreece.com/case_studies/greek-summer-state-of-mind) in collaboration with Marketing Greece. It supports the participation of companies in virtual exhibitions of international standards such as "Entives Business Travel and Meetings"-IBTM World of Barcelona with its official website http://www.gnto.gov.gr/. Also, the application of new technologies with the project #AgapiMouGrecia promotes to other destinations thematic contents of Greek attractions (http://www.gnto.gov.gr/el/Ypo-tin-aigida-tou-EOT-to-project -AgapiMouGrecia).
Weaknesses:
The weaknesses of Greece are the seasonality, the lack of support of its domestic tourism, the dependence on the international demand, the incomplete legal tourism framework, the non-creation of DMO in each regional unit and the lack of strong central planning for participation of stakeholders in creating a strategic plan.
Opportunities:
The opportunities for Greece are to ensure the cooperation between the Local Government Organizations, companies, and the local community. The creation of an info-point desk that will closely inform visitors in every part of Greece too. Also, attracting new markets through advertising campaigns to promote alternative forms of tourism and the interconnection of primary and secondary sector for the promotion of Greek local products advertising Greek gastronomy.
Threats:
The strong central administration of foreign governments with DMO and the dynamic presence of competing countries in gastronomic and cultural tourism is a threat. Also, the existence of a major crisis is like a pandemic.
A SWOT Analysis for Italy (Tuscany)
Strengths:
A destination management organization in Italy, specifically in Tuscany, has characteristics and advantages that are widely known in the international literature. DMO is based on long-term sustainable strategic planning and dynamically promotes special and alternative forms of tourism through the systems of its strong brand name with the slogan "Tuscany together" (http://www.toscanapromozione.it/). The advertising campaign 2021 "Tuscany, rebirth without end" contributes to the promotion of a unique and special tourism product with emphasis on agritourism and gastronomic culture (http://prodtrad.regione.toscana.it/). It also emphasizes the cultural heritage by displaying the great monuments in a unique way (http://www.toscanapromozione.it/magazine/turismo-congressuale-protocollo-dintesa-comune-convention-bureau-pisa/pisa-2390649_1920/). Attempts are made to strengthen small and medium-sized businesses by creating security for visitors in the field of technology and travel with the information they offer about their trip and their unique B2B and B2C marketing (https://www.promofirenze.it/tag/regione-tuscany/).
Weaknesses:
The main weaknesses are the lack of legal framework, the existence of prices that are very high in the services and businesses offered, the lack of improvement of transport and the need to improve them in areas where it is necessary to increase the tourism flow in

accommodation that does not have a formal form.
Opportunities:
In the case of Tuscany, the creation of other waste management committees besides the one established in 2014, the strengthening of transfer travel in terms of offering the Italian product, the participation of small and medium-sized businesses in international exhibitions with a leading role and the continue to support rural tourism are the opportunities.
Threats:
The strengthening of digital platforms in other destinations, the prevailing uncertainty and crisis (Covid-19), the creation of foreign DMOs or the strengthening of existing ones, and political instability are the threats.

5. Conclusions

DMO and DMS contribute to the promotion and strategic planning of a tourism destination with the aim of sustainable management and sustainable development of the local community. These systems also assist in communication between suppliers and consumers. The accuracy and the immediacy of the database, which includes information on accommodation, travel, and attractions, is very important. Through DMOs, DMS and especially through their platforms, the information of products/services of innovative, cultural, gastronomic character are promoted. Sustainable development is considered a key criterion for the promotion of a tourism destination by a DMO to highlight the highly sustainable characteristics of each area through digital platforms.

The case of Greece is very different compared to Italy. In Greece, there are concerns because while it has the Greek National Tourism Organization, GNTO, which undertakes the promotion of Greek tourism and alternative forms of tourism at the national level, there is no possibility to create a non-profit organization DMO in each region. Efforts are made to create a DMO in each region in accordance with law 4674/2020 and the tourism destination of Santorini is attempting to start this creation. The biggest problem identified through our study is the cooperation of the public sector with the private sector.

Tuscany, like every of its regional units, has its own strategic tourism development program that examines environmental resources, cultural heritage sites and local traditions that are directly linked to the presence of sustainable tourism. It incorporates the sustainable goals of the international agenda 2030, utilizes social media and brings the start of the participation of local partners in the procedural part of the promotion of the destination. It has achieved the synergy of the public and private sector, brought new jobs, and creating through the process of tourism branding a strong brand name.

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Navigating the Ethical Dimensions of Climate Change: Public Health, Public Administration, and Governance in a Changing World

Abstract:
Climate change is one of the most critical global challenges, impacting public health, public administration, and governance. This paper explores the interconnected ethical dimensions of climate change, emphasizing its disproportionate impacts on vulnerable populations and its far-reaching consequences on ecosystems and societies. With global warming driven primarily by human activities such as deforestation and the burning of fossil fuels, its effects are evident in the rise of greenhouse gas concentrations, extreme weather events, and threats to human well-being. The ethical implications include issues of fairness, justice, and responsibility, highlighting the need for intergenerational equity and global cooperation. Public administration plays a crucial role in addressing climate change, transitioning from reactive emergency responses to proactive strategic planning. Governance frameworks, from local to global levels, must integrate scientific and practical strategies to mitigate emissions and support adaptation. As the clean energy transition gains momentum, the role of ethical leadership becomes increasingly important in ensuring fair and sustainable progress. This paper underscores the urgency for coordinated efforts across sectors, guided by robust ethical principles, to navigate the complexities of climate change and build a resilient and equitable future.

Key-Words: **Climate change, public health, public adminstration**

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1. Introduction

The climate is a complex, large-scale system that represents the long-term average of weather patterns observed over several decades (Skanavis & Zapanti, 2023). From the tropics to the poles, climate change is a persistent alteration in weather patterns (Abbass et al., 2022) and one of today's society's most critical challenges (Leal Filho et al., 2021).

Climate scientists have largely agreed that recent global warming is driven by human activities, including deforestation, land use changes, and the burning of fossil fuels, despite ongoing political debates about the precise causes (Cook et al., 2016). This consensus is reflected in the Intergovernmental Panel on Climate Change (IPCC) statement that "human influence has been the dominant cause of the observed warming since the mid-20th century" (Qin et al., 2014). Climate change is broadly understood as a human-driven phenomenon resulting from industrial activities that release large quantities of greenhouse gases, such as carbon dioxide (CO2) and methane (He & Silliman, 2019).

The State of the Climate 2024 Report highlights that greenhouse gas concentrations hit unprecedented levels in 2023, with projections suggesting they will keep increasing in 2024. Specifically, CO2 levels have risen by 51%, methane (CH4) by 265%, and nitrous oxide (N2O) by 124% compared to pre-industrial levels (World Meteorological Organization, 2024).

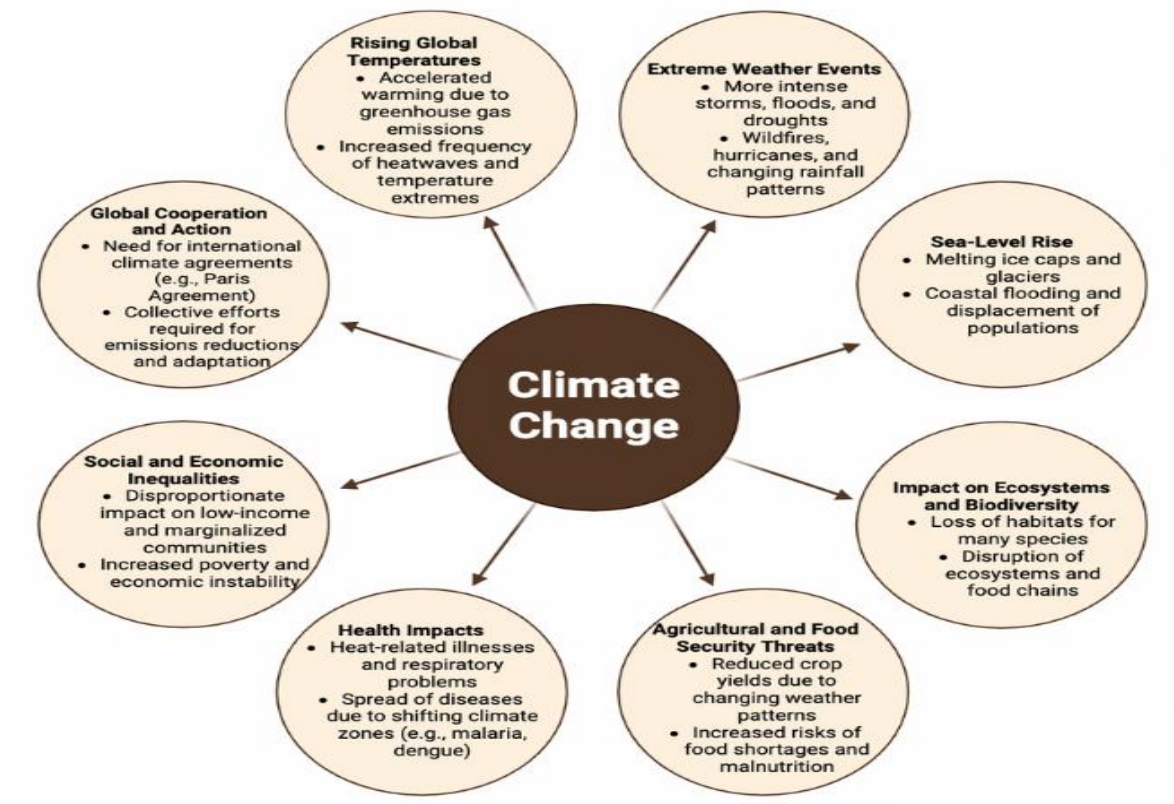

Figure 1: Climate Change as a Global Challenge

These changes have resulted in extensive negative impacts, along with associated losses and damages to both nature and people (IPCC, 2023). The environmental impacts of climate change, including rising sea levels, increasing temperatures, more frequent extreme weather events, intensified droughts, flooding, and wildfires, significantly affect human health and well-being (Zapanti & Skanavis, 2024).

Climate change has been affecting human lives and health through extreme weather events, changes in labor capacity, food security challenges, and shifts in the prevalence and geographical spread of infectious diseases worldwide (Di Napoli et al., 2022). Specifically,

health risks from climate change encompass direct threats to human life and well-being from extreme heat and climate-related disasters; the growing danger of changing patterns in vector-borne diseases; worsened respiratory and cardiovascular conditions due to increased heat and pollution; as well as the mental and physical effects of losing homes, livelihoods, and disruptions to water and food resources (Loud et al., 2024).

2. Climate Change and Public Health: A Growing Threat

It is undeniable that climate change and the resulting environmental degradation pose significant threats to public health (BMJ, 2023). Climate change affects global health through a variety of direct and indirect pathways (Haines et al., 2006). Each year, weather- and climate-related disasters claim thousands of lives globally and contribute significantly to the overall burden of disease (WHO, 2023).

Direct health impacts result from shifts in temperature and precipitation, as well as human exposure to extreme weather events such as heatwaves, wildfires, floods, and droughts (Xu et al., 2020). These impacts include increased cardiovascular mortality during extreme heat events, a higher prevalence of chronic kidney disease among outdoor workers in hot regions, and fatalities and other adverse health effects from smoke inhalation during wildfires (Gostimirovic et al., 2020).

Indirect effects arise from climate change-driven environmental and ecosystem changes, such as crop failures, diminished marine food production, geographic expansion of disease vectors, and reduced labor capacity (Ray et al., 2019). Additionally, climate change impacts social systems, with examples including reduced labor capacity in heat-sensitive occupations, population migration due to rising sea levels and food insecurity, and other factors influencing human mobility (McMichael et al., 2020).

Climate-related health issues, including communicable and non-communicable diseases (NCDs), premature deaths, malnutrition, and threats to mental health and well-being, are increasing. Many NCDs are particularly sensitive to climate change, as they are exacerbated by factors like dust, small particulates, heat, wildfire smoke, and allergens. Furthermore, climate-driven migration and displacement are rising, intensifying violent conflicts. The overall impacts of climate change on health are predominantly negative, with few positive outcomes.

Urbanization is amplifying the effects of extreme heat, and ageing populations are becoming increasingly vulnerable. Climate change is also a major driver of food insecurity, contributing to various types of malnutrition, including obesity-related malnutrition, and increasing susceptibility to diseases, particularly in low- and middle-income countries. Extreme climate events directly threaten well-being through their destructive effects and indirectly through income loss and population displacement. Heat-related health problems are expected to rise significantly, and the geographic range of several vector-borne diseases is predicted to expand.

3. Ethical Dimensions of Climate Change

The ethical dimensions of climate change extend to the principles of fairness, justice, and responsibility. Poorer nations, despite being the least responsible for greenhouse gas emissions, are disproportionately affected by the consequences of climate change, raising critical questions about distributive and corrective justice. Wealthier nations, historically the largest contributors to emissions, bear a moral obligation to assist vulnerable countries in adapting to and mitigating the impacts of climate change. This obligation includes providing financial support, technology transfer, and capacity-building initiatives to enhance resilience in less-developed regions (Grasso, 2007; Richards, 2003).

The concept of intergenerational justice further complicates the ethical landscape of climate change. Current generations are benefiting from the continued exploitation of fossil

fuels while imposing severe and lasting environmental costs on future generations. The principle of intergenerational equity demands that today's decision-makers prioritize long-term sustainability over short-term economic gains. Failure to address this imbalance risks exacerbating existing inequities and undermining the ability of future generations to lead healthy, secure lives (Gardiner, 2011).

The need for global cooperation to address climate change is widely recognized, but achieving consensus is hindered by ethical dilemmas and conflicting interests. Wealthier countries often prioritize their economic and geopolitical agendas, delaying meaningful action on global frameworks like the Paris Agreement. Ethical leadership requires transparent decision-making and a commitment to equity, ensuring that all countries—regardless of their economic status—are supported in transitioning to sustainable energy systems (Gardiner & Hartzell-Nichols, 2012).

Beyond governmental actions, individuals also play a vital role in combating climate change. Modern lifestyles, characterized by overconsumption and reliance on fossil fuels, contribute significantly to global emissions. Ethical considerations demand a shift toward more sustainable living, including reducing waste, adopting renewable energy sources, and supporting policies that promote environmental stewardship. However, such changes must be accompanied by systemic support to ensure accessibility and equity, particularly for marginalized communities (Barnard, 2023).

Emerging technologies, such as geoengineering and carbon capture, present both opportunities and challenges in addressing climate change. While these innovations offer potential solutions, they also raise ethical questions about unintended consequences, equitable access, and the potential for misuse. For instance, reliance on geoengineering might encourage complacency in reducing emissions, while unequal access to advanced technologies could deepen global disparities. An ethical framework is essential to guide the development and implementation of these solutions, ensuring that they align with the principles of justice, responsibility, and sustainability (Brown, 2002).

The ethical dimensions of climate change highlight the need for a multifaceted approach that integrates justice, responsibility, and fairness into global and local actions. By addressing these challenges, societies can build a more equitable and sustainable future, ensuring that the burden of climate change is not disproportionately borne by the most vulnerable populations or future generations. Urgent action, guided by robust ethical principles, is essential to navigate the complexities of the "perfect moral storm" and foster meaningful global cooperation.

Figure 2: The moral storm of climate change

4. The Role of Public Administration in Extreme Weather Events

Public organizations are increasingly encountering extreme weather events that cause significant, unpredictable, and disruptive changes, often resulting in substantial damage (Boin & Lodge, 2016). In response, public administration has traditionally relied on emergency, crisis, and disaster management protocols. Governments typically establish structured emergency response routines and formal contingency frameworks to coordinate efforts with first responders (Somers & Svara, 2009). However, the rising frequency, scale, and intensity of disasters have revealed the limitations of these current practices, emphasizing the urgent need for new, strategically focused approaches rather than purely operational responses (Comfort et al., 2012).

Continuous exposure to extreme events necessitates planned adaptation to enhance resilience, minimize damage, and sustain operations (Zhang et al., 2018). Nonetheless, the extent to which organizations adopt adaptive strategies varies significantly. While many still rely on reactive measures to address immediate consequences, others are shifting their focus to proactive strategies, such as addressing vulnerabilities before damage occurs. This involves integrating considerations of extreme events into long-term planning, infrastructure development, asset management, and inter-organizational coordination (Thomson, 2017).

As the climate crisis worsens, public health agencies and practitioners must prioritize the development of guidance documents that address health risks and protective strategies for multi-hazard scenarios (Coker et al., 2024). Climate change's anthropogenic nature means its impacts are distributed unevenly across time and space, making it a global challenge that cannot be tackled by any single entity. The costs and benefits of emission-generating activities are also unequally distributed, with some nations being more vulnerable to climate change due to their geographical location and limited economic resources, which affect their capacity to adapt (Hormio, 2023).

Addressing these challenges requires a coordinated, multi-level response that integrates strategic planning, international cooperation, and equitable resource distribution to

build resilience and ensure a sustainable future. Public administration plays a pivotal role in developing and implementing these adaptive and preventive measures.

5. Climate Change Governance

In an era of intensified global competition, climate change governance has evolved beyond being solely an environmental concern, highlighting the critical need for international cooperation (Wang & Fang, 2024). As a pressing issue at both global and local levels, it demands a comprehensive and coordinated approach for effective mitigation and adaptation. Climate change governance integrates scientific and practical analysis and is closely tied to governmental systems, public administration, private sector activities, and civil society organizations, including NGOs (Knieling & Leal Filho, 2013).

Historically, leadership in global climate governance has alternated between Europe and the United States. Until 2000, the U.S. played a dominant role. However, after its 2001 withdrawal from the "Kyoto Protocol," U.S. leadership declined, allowing the European Union to assume a leading position (Bodansky et al., 2016). The EU initiated efforts to establish a governance framework, set negotiation agendas and rules, and advocate for the implementation of the Kyoto Protocol. However, its leadership faced challenges, particularly following the 2009 Copenhagen Conference (COP15), which delivered disappointing outcomes (Groen & Niemann, 2013).

By 2015, a collaborative effort among China, the United States, and the European Union led to the Paris Agreement, establishing a tripartite leadership model in global climate governance. Beyond this broad leadership, there is increasing acknowledgment of the significant roles played by individual countries and interest groups in shaping the governance landscape (Wang & Fang, 2024).

The transition to clean energy has emerged as a pivotal strategy for achieving carbon neutrality, garnering significant global attention. Countries and interest groups are deeply engaged in discussions around energy transitions, rulemaking, standard setting, and green innovation, all aimed at reducing emissions and promoting sustainability. This dynamic is reshaping the leadership landscape in global climate governance. However, developed countries often use their leadership in this context to protect their interests, which can undermine equitable and sustainable progress toward global carbon neutrality (Wang & Fang, 2024).

While mitigation efforts are vital, societies must also adopt adaptation strategies to reduce the impacts of climate change. Measures such as constructing taller dikes, revising water management systems, developing heat-resistant crops, or even relocating populations can help address immediate and long-term challenges. However, even if the global carbon budget aligns with the Paris Agreement targets, countries will still face the financial and social costs associated with adaptation and the damages caused by climate change (Davidson, 2021).

Climate change governance requires collaborative, equitable, and innovative solutions to address the complexities of mitigation, adaptation, and the transition to a sustainable future. By balancing leadership, adaptation measures, and the pursuit of carbon neutrality, global efforts can foster resilience and fairness in tackling one of the most pressing challenges of our time.

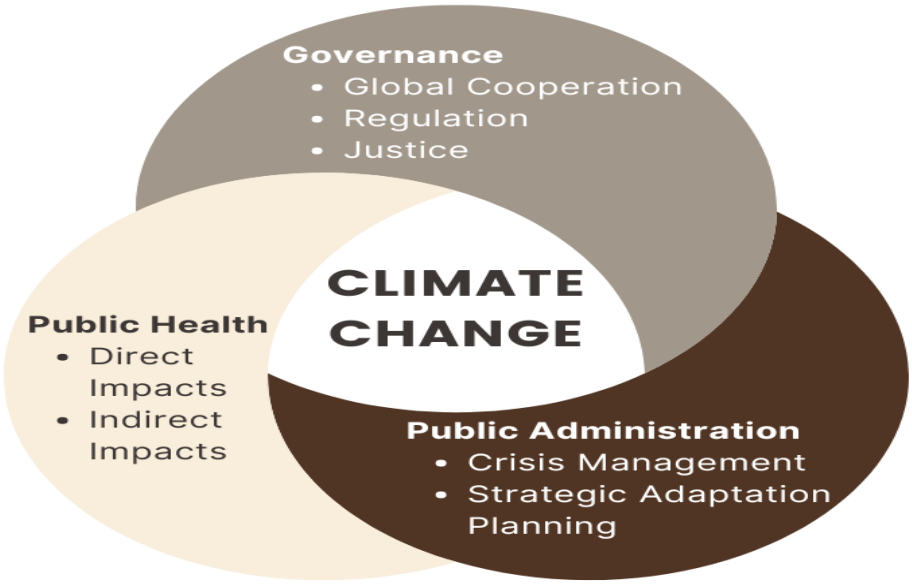

Figure 3: Relationship of Climate Change with Public Systems

6. Conclusion

Navigating the ethical dimensions of climate change requires a multifaceted approach that integrates public health, public administration, and governance. Climate change poses significant threats to human health and societal stability, with disproportionate impacts on poorer nations and vulnerable populations. Ethical considerations, including fairness, justice, and responsibility, demand that wealthier nations and global leaders take proactive steps to address these disparities through financial support, technological innovation, and capacity-building measures.

Public administration must transition from reactive strategies to comprehensive, forward-thinking frameworks that strengthen resilience and mitigate risks. Effective governance at both local and international levels is essential, emphasizing collaboration, equitable resource distribution, and transparent decision-making. Additionally, individual and collective actions, from adopting sustainable lifestyles to embracing innovative technologies, are critical in combating climate change.

As the clean energy transition reshapes global leadership dynamics, it is imperative to balance national interests with the global goal of carbon neutrality. By fostering ethical leadership and integrating justice and equity into climate policies, societies can create a sustainable and resilient future. Addressing climate change is not just an environmental necessity but a moral imperative to protect current and future generations.

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Vulnerability, Exploitation, Trafficking of Unaccompanied Minor Girls, and "Significant Others"

Abstract:
Discussions on child trafficking take on particular importance in contemporary societies, where migratory flows and asylum policies present significant challenges. Social, economic, and legal conditions across various regions of the world necessitate a thorough understanding of this phenomenon in order to devise policies and implement protective measures. Sex trafficking is a multifaceted phenomenon closely intertwined with gender identities and contemporary theories of gender and sexuality. Understanding and analyzing this issue requires examining various theoretical approaches that bring to light the social, cultural, and political dimensions of gender and sexuality. Such an approach fosters a deeper understanding of the distinct ways in which trafficking impacts women, men, and individuals of diverse sexual identities. Unaccompanied minor girls face multiple layers of vulnerability that require interdisciplinary approaches to apprehend and address. Such vulnerability results from a confluence of social inequalities, insufficient safety nets, and exposure to diverse forms of exploitation. Collaboration among nations, nongovernmental organizations (NGOs), and local communities is indispensable for creating a safety net to protect these children from trafficking and exploitation. Enhancing access to education, healthcare, and psychosocial support is central to any holistic approach.

Key-Words: unaccompanied minor girls, vulnerability, exploitation, trafficking

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1. Introduction

The vulnerability of unaccompanied minor girls has become a central research focus in the social sciences and humanities, highlighting the complex nature of exploitation and child trafficking. Specifically, the conditions that foster the exploitation and trafficking of minors—both at national and international levels—are closely linked to social, economic, and cultural factors. Within this context, the role of "Significant Others," as defined in sociological theory, is pivotal in shaping these children's identities and influencing whether they experience protection or exploitation.

Discussions on child trafficking take on particular importance in contemporary societies, where migratory flows and asylum policies present significant challenges. Social, economic, and legal conditions across various regions of the world necessitate a thorough understanding of this phenomenon in order to devise policies and implement protective measures.

The concept of vulnerability is illuminated by Goffman's theory of self-presentation in everyday life (Goffman, 1959) and by social network theories. In Goffman's framework, vulnerability is closely tied to interaction processes, impression management, and social stigma. At the same time, the processes of child exploitation and trafficking are examined through the lens of Agamben's (1998) theory of sovereignty, in which borders function as zones of exception, intensifying the already heightened vulnerability of these groups.

A key concept in this context concerns "Significant Others." These may include parents, caregivers, social workers, or even traffickers themselves, all of whom have a decisive impact on the psychosocial development and trajectories of unaccompanied minors (Mead, 1934). Bandura's (1977) social learning theory sheds light on how these relationships contribute to the socialization or marginalization of girls, emphasizing the roles of observational learning, modeling, and reinforcement of behaviors by "Significant Others."

Feminist theory further provides analytical tools for understanding the gendered dimensions of trafficking. Intersectionality theory (Crenshaw, 1991) demonstrates how vulnerability and experiences of exploitation are shaped by the intersection of gender, race, class, and age.

Sex trafficking is a multifaceted phenomenon closely intertwined with gender identities and contemporary theories of gender and sexuality. Understanding and analyzing this issue requires examining various theoretical approaches that bring to light the social, cultural, and political dimensions of gender and sexuality. Such an approach fosters a deeper understanding of the distinct ways in which trafficking impacts women, men, and individuals of diverse sexual identities.

Human trafficking often capitalizes on socially constructed gender and sexual inequalities. Insights from modern gender and sexuality theories reveal how gender identities both influence and are shaped by exploitative practices such as sex trafficking. Contemporary theories highlight that gender and sexuality are not merely biological facts but are socially and culturally constructed concepts (Butler, 1990). Feminist and queer theories examine how social structures and power discourses shape gender identities and sexual practices. Intersectional approaches recognize that individual experiences are formed by multiple intersecting identities—such as gender, race, class, and sexuality—underscoring the fact that trafficking affects women, men, and sexual minorities differently.

Using gender identity and sexuality theory to examine sex trafficking facilitates an exploration of deeper social mechanisms that perpetuate these phenomena. Simultaneously, it points toward more comprehensive and effective strategies for addressing and preventing child trafficking, guided by goals of enhanced protective policies and social justice.

2. Human Trafficking as a Form of Gender-Based Violence

Human trafficking is among the gravest forms of gender-based violence and constitutes a severe violation of human rights, reflecting the deep-rooted inequalities that shape global social structures. According to the United Nations, it is a global issue that disproportionately affects women and girls, thereby demonstrating its profound gendered dimensions (United Nations Office on Drugs and Crime [UNODC], 2020).

Human trafficking is defined in the Palermo Protocol as the recruitment, transportation, transfer, harboring, or receipt of persons through threats, force, or other forms of coercion for purposes of exploitation—most commonly sexual exploitation, forced labor, or organ removal (United Nations, 2000). Data indicate that 71% of trafficking victims are women and girls, the majority of whom are subjected to sexual exploitation (UNODC, 2020).

This practice is closely tied to patriarchal structures and inequalities that prevail in many societies. Women and girls from vulnerable populations, such as impoverished communities or conflict-affected regions, constitute easier targets for traffickers (Huda, 2006). Economic insecurity and lack of opportunities represent key factors pushing women to become victims of trafficking. Traffickers exploit the victims' financial desperation by offering false promises of work or a better life (Shelley, 2010). Areas plagued by armed conflicts exhibit higher rates of trafficking, given the instability and lack of state protection that heighten women's vulnerability (UNHCR, 2015).

3. Human Trafficking from a Sociological Perspective: Critical Theory and Analysis

Trafficking is one of the most alarming and extreme social phenomena, marked by the exploitation of individuals for sexual, labor, or other commercial purposes. This phenomenon spans the globe and is tightly bound to social inequalities, globalization, and the oppression of the most vulnerable groups. In contemporary sociology, critical theory offers a powerful framework for dissecting such phenomena, focusing on social structures and power relations that reproduce exploitation and oppression.

Developed by the Frankfurt School—whose scholars include Theodor Adorno, Max Horkheimer, and Herbert Marcuse—critical theory scrutinizes the social structures that promote oppression and inequality, advocating for fundamental social transformation. From this perspective, trafficking cannot be viewed solely as an individual or criminal act; rather, it is a product of broader social and economic conditions that perpetuate oppression and exploitation.

Critical theory probes the social contradictions that underlie inequalities and oppressive power relationships, examining how societies reinforce these conditions through political, economic, and cultural institutions. Within this context, trafficking may be viewed as an extreme manifestation of social oppression and exploitation, sustained by dominant social forces and borne by marginalized groups.

Proponents of critical theory argue that trafficking is inherently linked to the social and economic inequalities engendered by the capitalist mode of production. According to Herbert Marcuse (1964), sexual oppression is integral to the larger exploitation system, where individuals—particularly women and minorities—are seen as commodities. Trafficking, understood as the commerce of human bodies, represents one expression of exploitation's perpetuation in a capitalist world that "leverages" the most vulnerable and marginalized populations for profit.

Max Horkheimer (1972) maintains that this exploitation is perpetuated through social relationships in which oppressed groups—such as women, migrants, and the poor—are often valued only for their labor power or as objects of sexual exploitation. For women in particular, trafficking is the extreme embodiment of sexism and patriarchy within a capitalist structure that treats them as disposable "commodities," stripping them of their humanity.

Theodor Adorno (1975) highlights the influence of the "culture industry" on social practices, including trafficking. According to Adorno's theory, consumer societies perpetuate exploitation and fetishization through mass media and cultural products, promoting specific beauty and sexual norms. Such norms reduce women to sexual objects and facilitate the perpetuation of trafficking as a commercial practice. The culture industry effectively "produces" norms that emphasize physical appearance and commercial appeal, reinforcing the commodification of women's bodies (and those of other vulnerable groups). This process is inseparable from the commercialization of human sexuality and the devaluation of human worth to mere objects of sale.

Critical theory extends beyond analyzing capitalist-driven exploitation, to include investigating the social pathologies that bolster these practices. Social pathology theory (Erikson, 1966) posits that social pathologies arise when institutions fail to protect societal members, allowing inequalities to grow through the normalization of exploitation.

In the case of trafficking, society fails to create protective mechanisms for the most vulnerable—women, children, and migrants. Institutions meant to uphold their rights (e.g., legal systems, educational structures, welfare networks) frequently fall short or exhibit indifference, thereby enabling the perpetuation of exploitation. As a result, society comes to tolerate trafficking as a "necessary evil," sustaining the structural inequalities that give rise to such exploitative practices.

International scholarship linking trafficking with critical theory explores how exploitation and inequality operate across diverse cultural and social contexts. David Feingold (2005) underscores the connection between trafficking, globalization, and the expansion of a capitalist system that exploits "vulnerable labor," while Kevin Bales (2007) frames trafficking as a global mechanism of exploitation—a form of "modern slavery" on a worldwide scale.

Judith Butler (2010) examines the concept of "humanitarian crisis" and the social pathologies that magnify trafficking, focusing on the political and social marginalization of populations labeled "unproductive" or "invisible," including refugees and minority groups.

Although Greek scholarship on this topic is limited, it highlights how trafficking in Greece intersects with patriarchy, economic crises, and the inability of social institutions to protect the rights of vulnerable groups. For instance, Papageorgiou et al. (2022) examine the ways in which trafficking aligns with social inequality, the inadequate enforcement of rights, and the lack of support mechanisms for victims. Michalis Papadopoulos (2021) contends that trafficking in Greece has been exacerbated by the economic crisis and the rise of fascist ideologies, both of which weaken human rights principles and collective solidarity.

Trafficking, viewed as a criminal practice, cannot be fully understood merely in terms of individual crime or illicit activity; it is also an expression of broader social dysfunction and exploitation fueled by power hierarchies and social inequalities. Critical theory thus provides a robust lens to examine the social drivers of trafficking, emphasizing the importance of social change and radical reforms to combat exploitation and uphold human dignity.

4. Conflict Theories

Human trafficking, as a form of exploiting individuals for sexual or other labor activities, poses a global challenge directly linked to structural social inequalities and oppressive societal frameworks. Within the sociological analysis of conflict theories, trafficking is examined as a social practice that reproduces power asymmetries and exploitative relationships. Conflict theory, developed by eminent sociologists such as Karl Marx, Louis Althusser, and Glenn Taylor, offers a valuable perspective on how structural social forces sustain trafficking by perpetuating inequalities and oppression.

Conflict theory concentrates on the distribution of power and resources in society and the tensions among different social groups vying for them. In the context of trafficking,

powerful social groups exploit the most vulnerable, thereby reinforcing social hierarchies and undermining fundamental values of equality and human dignity.

From Karl Marx's (1992) point of view, social conflict arises from contradictions between dominant and oppressed classes. Marx conceptualized society as composed of two main groups: the ruling class (capitalists) and the working class (proletarians), locked in continual struggle over resources and authority. Trafficking can thus be framed as an intensified form of exploitation of the poorest and most marginalized by the dominant class, which treats these groups (e.g., women, migrants, low-income individuals) as a source of profit.

Conflict theorists such as Herbert Marcuse and Rudy Dohen contend that social inequalities—including race, gender, sexuality, ethnicity, and class—drive exploitation and oppression. In trafficking, these inequalities create a foundation for abusing the most vulnerable, who are often deemed mere "commodities" for consumption or exploitation.

Trafficking exemplifies acute social conflict, highlighting the power struggles between disparate social classes and groups. Its underlying causes can be traced to structural inequalities permeating society:

- **Economic Inequalities**: In societies marked by steep economic divides, individuals in lower social strata (e.g., the impoverished or migrants) are more susceptible to exploitation, lacking the resources needed to meet basic needs. Traffickers exploit these economic hardships to exercise control and profit from victims' bodies, reflecting the fundamental conflict between the economically powerful and the marginalized.
- **Racial and Ethnic Inequalities**: Victims of trafficking are often women, children, and migrants from socially and ethnically disadvantaged groups. Racial and ethnic identities, interwoven with gender and class, create a social hierarchy that further enables exploitation. The conflict between dominant and oppressed racial and ethnic groups amplifies this vulnerability.
- **Gender and Trafficking:** Sexual exploitation and trafficking are inseparable from the realities of gender-based inequalities. Women—especially those from disadvantaged social groups—are often the most vulnerable to trafficking because they occupy lower social positions relative to men. Social contradictions arising from gender inequalities yield practices that reduce women to exploitable objects.

Internationally, sociologists employing conflict theory underscore the ties between social disparities and trafficking. David Feingold (2005) argues that trafficking is a direct byproduct of globalized economic inequities, which sharpen social and financial divides between the developed and developing worlds. Individuals fleeing these regions in pursuit of improved living conditions often fall prey to exploitation. John G. Thomas (2013) also highlights how systemic poverty and structural inequalities across societies create a fertile landscape for trafficking. The struggle over resources -economic, social, and political- facilitates the victimization of the most vulnerable.

Greek scholarship further underscores the connection between trafficking and social conflict. Papageorgiou et al. (2022) point out that Greece is a key transit hub for human trafficking in Europe, owing in large part to its geographic position as a gateway for victims from Eastern Europe, Asia, and Africa. This geopolitical reality intensifies social conflict, as Greece simultaneously serves as both a destination and a route for trafficking victims.

Zoi Papadopoulou (2021) in her research on anti-trafficking policies in Greece notes that trafficking is tightly woven into social inequality and structural divides among groups. Inadequate social policies and the normalization of such exploitation reinforce these conflicts and help preserve the phenomenon.

Accordingly, trafficking is a complex social issue that can only be fully grasped by exploring the conflicts that permeate it. Conflict theory illuminates the inequalities and power

dynamics that perpetuate exploitation and oppression, forming the basis of trafficking. Recognizing social and economic disparities, as well as structural oppression, is critical for understanding this phenomenon and devising strategies to combat it.

5. Theories of Crime and Social Pathology

Trafficking is one of the gravest and most extreme forms of exploitation in contemporary society, carrying dire consequences not only for its victims but also for social and legal institutions more broadly. It involves the commercial exchange of human bodies for sexual exploitation, forced labor, or other exploitative ends (Papageorgiou et al., 2022). This phenomenon goes beyond the immediate victimization of individuals, highlighting deeper social inequities and power dynamics between dominant and subordinate groups (Held, 2006).

Theories of crime and social pathology offer valuable insights into trafficking as a social phenomenon. These theories do not treat criminality solely as an individual behavior but rather as the result of social, economic, and cultural conditions that foster or perpetuate injustice and inequality. In trafficking's case, social pathology is understood as a product of these inequities and the failure of social institutions to safeguard the most vulnerable (Erikson, 1966).

Criminological and social pathology theories link criminal behavior to the sociocultural environments that encourage it. Émile Durkheim viewed criminal acts not merely as individual violations but as expressions of social abnormality or "pathology" related to the erosion of social norms and community solidarity. While Durkheim posited that crime is a normal feature of any society, an excessive incidence of crime reveals social inequalities and crises that erode social stability.

Robert K. Merton (1938), in his strain/anomie theory, focuses on how social inequalities and limited opportunities to achieve culturally prescribed goals can prompt individuals to turn to illegality. When social aspirations are high but individual means are restricted—often for social or economic reasons—people may resort to illicit or exploitative activities for survival or upward mobility. In sex trafficking, this notion of anomie or strain is apparent when vulnerable groups such as migrants, low-income women, or children have little access to resources or protection, pushing them toward exploitation.

Kai Erikson's (1966) approach to social pathology describes how criminality and deviance arise when social processes and institutions fail to identify or address norm violations and inequalities, effectively normalizing them. In the context of trafficking, social pathology surfaces when the state, community organizations, and civic structures fail to protect those at risk.

Inextricably linked to social and economic disparities, trafficking exemplifies how these conditions drive social pathology. David Held (2006) highlights that in destabilized social environments—often impoverished regions with weak social protections—people are more exposed to exploitation. Structural poverty, restricted access to education, and limited social mobility create situations in which trafficking flourishes as both a criminal enterprise and a manifestation of deeper social dysfunction.

Global inequality and the realities of a globalized marketplace also exacerbate social pathology. Transnational criminal networks take advantage of stark economic disparities between developed and developing nations, establishing a market for human exploitation that reproduces global injustice (Bales, 2007). Trafficking thus operates as a system that perpetuates both criminality and social abnormality at the global level, highlighting the urgency of collective international efforts to fight exploitation and inequality.

In the international literature, trafficking is frequently discussed within the context of social pathology and structural inequities. Kevin Bales (2007) emphasizes that lack of education, poverty, and political turmoil in many countries foster susceptibility to trafficking.

Likewise, Jody Miller's (2015) work on trafficking in the United States demonstrates how issues of poverty, racial and gender discrimination, and social disparities create a fertile ground for victimization through trafficking.

Greek scholarship affirms the relationship between trafficking, social inequality, and institutional shortcomings. Papageorgiou et al. (2022) point to Greece's role as both a transit and destination country for trafficking victims, highlighting the structural inability of legal and social systems to respond effectively to exploitation. Zoi Papadopoulou (2021) underscores the role of Greek social institutions, arguing that poverty and entrenched social inequities, coupled with insufficient policies for prevention and victim protection, perpetuate social pathology.

Thus, sex trafficking should not be viewed merely as a crime but as a manifestation of social pathology reproduced by systemic inequalities and institutional gaps. A sociological examination grounded in theories of crime and social pathology illuminates the causes of trafficking, underlining the pressing need for comprehensive social and legal reforms aimed at eradicating human exploitation.

6. Discussion

The above analysis of trafficking, viewed through theories of crime and social pathology, indicates that trafficking is not solely an individual-level offense; it also reveals how social inequalities permeate institutional frameworks across societies. Trafficking exposes the breakdown of social cohesion and the inability of institutions to safeguard the most vulnerable communities, including marginalized and oppressed populations. In particular, the trafficking and exploitation of unaccompanied minor girls highlight systemic failures at both national and international levels.

Moreover, strengthening the role of Significant Others as positive agents of socio-emotional support is critical to establishing protective welfare networks and dismantling this phenomenon. In this context, measures such as bolstering reception communities, training social workers, and empowering girls through targeted educational programs emerge as crucial strategies to combat and prevent trafficking. Specifically, adequately training social workers to recognize and protect trafficking victims is a fundamental priority for enhancing institutional intervention. Empowering young girls by providing education and skills development can offer them the means to escape exploitative situations and integrate safely into society.

Additionally, cross-border cooperation remains essential to dismantling global trafficking networks. Comprehensive educational programs and awareness campaigns can help in identifying victims and reinforcing protective mechanisms.

7. Conclusions

Unaccompanied minor girls face multiple layers of vulnerability that require interdisciplinary approaches to apprehend and address. Such vulnerability results from a confluence of social inequalities, insufficient safety nets, and exposure to diverse forms of exploitation. Collaboration among nations, nongovernmental organizations (NGOs), and local communities is indispensable for creating a safety net to protect these children from trafficking and exploitation. Enhancing access to education, healthcare, and psychosocial support is central to any holistic approach.

Moreover, focusing on the intersectionality of girls' experiences—acknowledging the cultural, social, psychological, and economic aspects of their vulnerability—can yield more inclusive and effective intervention strategies. By recognizing how various factors interact to shape each girl's unique experience, stakeholders can better design policies and practices that safeguard unaccompanied minors from trafficking and exploitation, ultimately fostering social justice and equality.

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