

## The Contribution of Sports Tourism to Sustainable Development Based on Sustainable Development Indicators – The Case of Greece



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**SUMMARY:** Development in the sense of growth under pure economic perspective is now considered outdated and anachronistic. In recent years, if not decades, development is only meant to be sustainable. This is due to the fact that if it does not become sustainable it will soon cease to exist.

In this regard, there have been attempts to measure development and sustainability mainly by the United Nations but also by many scholars. This process resulted in the construction of 50 main and 46 secondary indicators for sustainable development in 2007, which differ from the indicators that determine the percentage of achievement of the 17 Sustainable Development Goals as set in 2015.

In this paper, an attempt is made to categorize the 96 Sustainable Development indicators of the U.N. according to Maslow's pyramid of needs and Bossel's indicator categories. This combination forms the pyramid of sustainable development in which the individual indicators are distributed. The purpose of this categorization is to investigate the contribution of sports tourism to sustainable development based on the individual indicators as well as its extent within the categories of the pyramid. Schematically, the pyramid helps to visualize the contribution of sport and tourism to sustainable development.

From the correlation of the above, it indeed emerges that there is a relationship between the elements of sports tourism (sport and tourism) and the indicators of sustainable development. In particular, the literature review and the correlation of the specific indicators show the contribution of sports and tourism to 12 of the 96 indicators of sustainable development or 12.5%. Correspondingly, tourism and sports respectively present a degree of contribution towards 8 of the 17 goals (47%) for sustainable development in 2030.

**KEYWORDS:** Sports, Tourism, Sustainable development, indicators, Sustainable development pyramid.

### INTRODUCTION

While the concept of sustainability focuses mainly on the management of natural resources, Sustainable Development has applications in the fields of well-being and justice and concerns the economic, environmental as well as the social aspects of development within a society or a place (Wise, & Perić, 2017). With the term "development", we do not mean purely economic prosperity linked to absolute economic figures, continuous growth of economic indicators and GDP. The development of a place, a destination or a region, etc., involves economic progress on the one hand, but it must also aim at those qualitative characteristics, which will be able to provide the residents, visitors of this place with social, cultural and moral progress and overall optimization of their living conditions and quality of life, simultaneously with economic development. Such a thing, according to several researchers (Sartzetakis, Papandreou, 2002), seems to be particularly difficult in terms of its implementation at least, for this reason they consider that the concepts of development and sustainability are rather incompatible if there is no significant technological progress or substitution in the use of inflows. The same study, however, concludes that a shift towards sustainable development is necessary, emphasizing the importance of the three pillars of sustainable development as well as the broad thinking required for synergies between different sectors (Mingaleva, et al., 2017).

Development is directly related to evolution but mainly to the optimization of human quality of life. Development is considered the overall growth and expansion of the sectors of the economy and production but also qualitative parameters of human life,

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such as leisure, holidays, social and other issues that go beyond the narrow limits of the economy (Mitoula, Astara and Kaldis, 2008). However, this in many cases can produce negative results in the smooth operation of various sectors of a place or region. This can be the reduction of natural resources or the destruction of the natural environment and micro-environment, even the disruption of local traditions, customs and morals. In this way, development faces limits either in terms of economic growth and development or social and ecological limits (Mitoula, Astara and Kaldis, 2008<sup>1</sup>). These limits are determined by the endurance and tolerance of the natural environment to human exploitation, as well as by the capability of producing natural resources. There is a risk of over-exploitation of resources (natural or human), having as a result, to be no longer possible to exploit them either because they wither/aging or because they vanish. The limits of economic development-growth and the possibilities of a global catastrophe, presented for the first time in 1972 in the now classic "Limits to Growth", the work of a group of dynamical systems scientists (Meadows et al., 1972). In the same year, the Stockholm Declaration states that economic development cannot continue without the parallel protection of the environment.

The result of this marginal situation is the absence of quality of life despite the possible increase in growth rates which are measured by the GNP per capita. This happens due to the fact that development rates, ultimately result from values that cannot be measured in absolute terms but from qualitative characteristics that have a catalytic effect on the quality of human life such as food, quality at work, unemployment rates, the environment, free time and others. These qualitative characteristics compose along with the concept of development, the notion of sustainable development which includes the concepts of sustainability and viability. Thus, in 1987 for the first time was heard the term Sustainable Development and its definition (Brundtland, 1987) was given by the U.N.'s World Commission for the environment and Development. Also, at the Rio International Conference in 1992, the principles of Sustainable Development were for the first time formally formulated and the approximately 900-page document known as "Agenda 21" was composed, included economic and social recommendations for the 21st century, so that to achieve sustainable development while protecting the environment. This definition was a guide for local administration and by extension for the governments of each country, in order to achieve the element of sustainability in development (Mitoula, 2006). In "agenda 21", Sustainable Development is defined as: "development that provides long-term economic, social and environmental benefits while meeting the needs of present and future generations".

### Sustainable Development

Although the term "sustainable development" or "sustainability" seem to relate only to the sustainability of the environment, and it is somewhat normal since as a term it comes from the environmental sciences, nowadays it has gone beyond the environmental framework itself and affects the ecosystems, the economy, the technological development as well as the society and culture (Mitoula, 2006). So, the term sustainability means the harmonious coexistence of the above factors in the present but also in the future in a sustainable form that allows the perpetual, lasting and balanced interaction of these factors and the triptych "economy - environment - society". By extension, sustainable development means to care for the protection of the environment, for the quality of life and social cohesion in order to progress and evolve in cultural and economic terms (Nilashi et al., 2019).

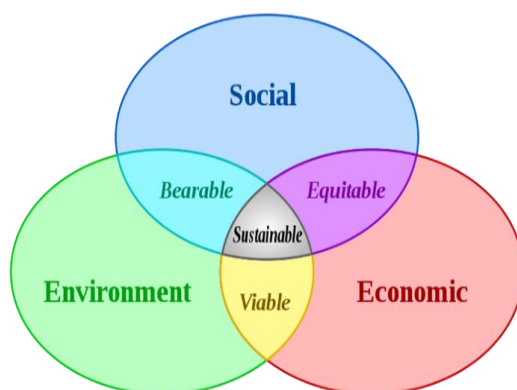


Figure 1. Key pillars of Sustainability

These concepts appear to be theoretical and without measurable and tangible way of representation, however finding appropriate ways to measure and compare the degree of development and sustainable development performance was of paramount importance in order to make it possible to assess and evaluate the environmental, social and economic indicators of a region and

<sup>1</sup> As above pages 26-27.

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of a place in the present, as well as the possible prediction of probable interventions in an area (Rosati, & Faria, 2019). The types of measurement indicators are divided into three basic categories (Atkinson, 1996), environmental, economic and social. These categories are also supported by secondary indicators that refer to the three main categories (Spangenberg, 2004).

To find the most effective indicators for measuring sustainable development, efforts have been made, among others, by the OECD for the environment in 1993, by the World Bank for the economy in 1995-1997 and also by the United Nations Commission since 1992 and continuing to the present day while these efforts finally paid off in 2001 when the commission for sustainable development established by the United Nations announced the final framework of 58 indicators. In 2007, there was a revision of the indicators and their number, to 50 main indicators and 46 secondary indicators from a total of 96 (United Nations, 2007), which are present as a guide in conducting this research. The "turn", finally, towards sustainable development and its parameters, is now imperative and recognized both at a theoretical and institutional level (Sartzetakis, Papandreou, 2002). Thus, in 2012 at the Rio conference (United Nations, 2012), a framework for action towards sustainable development was created, laying the foundations and strengthening the positions of the member states of the United Nations in this direction by stepping on the principles of "Agenda 21" and the international Johannesburg Conference. In this 2012 Rio international conference called "Rio+20", the pillar of sustainable development "environment" is primarily addressed and the framework themes and cross-cutting themes for actions are recorded. These topics include, but are not limited to, poverty, sustainable tourism, sustainable cities, population health, work, seas, forests, biodiversity, education, gender equality, etc. and set targets for actions within this established framework. As it is observed, these topics draw their basis from the previously defined indicators for sustainable development (United Nations, 2007) something that demonstrates their particular importance for future strategies and specific goals.

Following the efforts of the United Nations that mentioned above concerning the establishment of sustainable development indicators and the institutionalization of the action framework, in 2015 the same organizations announced the 17 goals for sustainable development with the individual 169 goals-factors that must be met in order for these 17 main goals to become a reality. The road towards this direction was opened with the Council of the United Nations and the "Agenda 2030" (United Nations, 2015), where these 17 goals were set for the first time in order to achieve sustainable development in the year 2030 with a collective effort in a fifteen-year plan starting on January 1, 2016. The 5 axes on which the goals were structured were people, the planet, prosperity, peace and brotherhood. Taking into account all the above as well as the principles and the vision of the organization, in the declaration of 2015 the 17 sustainable development goals along the 169 individuals were recorded. For the evaluation of the above goals, of course, special indicators were created which refer to the individual 169 sub-goals. The number of those unique indicators (United Nations, 2017) is 231 (they are 247 but 16 of them are repeated) as they have been formed with the annual reforms until March of 2021. At this point it is worth noting that these indicators differ in use and purpose from the more general sustainable development indicators of 2007 and are specialized in the goals for sustainable development. In this way, in order for the theoretical contribution of sports and tourism to sustainable development to be shown, it is considered necessary to correlate the aspects of sports and tourism with the sustainable development indicators of 2007 instead of the evaluation indicators of the goals set for 2030.

### **Sustainable Development Indicators**

Sustainability in an evolving world can only mean sustainable development (Bossel, 1999), and this is because when the rates of change of a system (economic, social or environmental) exceed its ability to react and adapt, then it ceases to be sustainable and becomes unstable. In order to achieve sustainability in development, development strategies and actions should be set in three main areas and in six individual operating systems of human social life. Always the main purpose is to satisfy the needs of people and its society with priority given to basic needs and moving towards the needs of secondary importance. This is the reason why in the present paper are correlated: a) Maslow's pyramid of needs, b) Bossel's categories of sustainable development indicators and c) the indicators for the sustainable development of the United Nations, in parallel with the triptych economy, society and environment that distinguishes the concept sustainability.

Thus, is formed a scheme that combines the three axes of sustainable development<sup>2</sup>, to which the six subsystems of Bossel correspond (grouped into three), and by extension the inclusion of United Nations indicator groups in these subsystems. This way provides a creative visualization of the indicators in a model, which takes into account the aspects of sustainable development, groups the data and is based on the individual characteristics that distinguish the particularities of sustainability, alongside the nature of the society which characterized by the dynamic environment, which as a living system operates on the

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<sup>2</sup> Environment, Economy, Society

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basis of needs that are ranked below according to Maslow's pyramid (Darabi et al., 2020). In this way, we have a model that serves as a tool that: categorizes, summarizes, prioritizes the needs and by extension the use of indicators and finally depicts the status quo for sustainable development, taking into account all the above-described parameters.

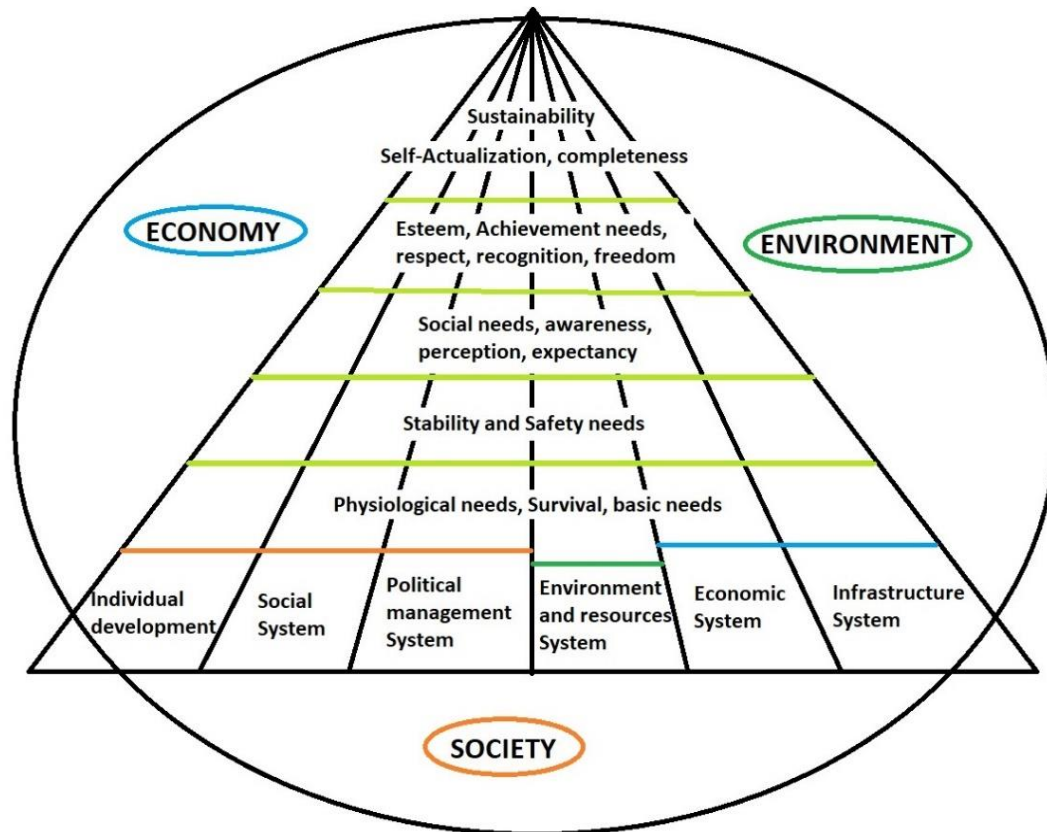


Figure 1. Three different colors orange, green and blue for the three pillars related to six subsystems

Thereafter, an attempt is made to correlate the five levels of needs, with social criteria, in relation to the 96 indicators (50 basic and 46 secondary) of sustainable development (United Nations, 2007) in order to achieve a hierarchical connection between them. The indicators and criteria are surrounded and supported by the three pillars of sustainable development while they act and operate within this framework (Figure 2). The concept of a dynamic environment of the sustainable development process is supported by several researchers, who emphasize that "Today, it is generally accepted that sustainability is a dynamic process based on three "pillars": the economy, society and the environment" (Andriotis, 2005, Sartzetakis, Papandreou, 2002) and they present twelve fundamental principles (Dekleris, 2000, 2005) that shape the general framework of sustainable development. In reality, these twelve principles are nothing more than the presentation of the elementary processes and tactics, which are necessary in order to move from growth to sustainable development, bringing together in twelve propositions the prerequisite elements for achieving sustainability in critical sectors that still develop such as tourism. Given these principles and in order to exist sustainable development in parallel in all the sectors of the pyramid which was presented above, should be laid the basis for categorizing the indicators of sustainable development as they were set by the United Nations in 2007, in 6 individual categories as presented in the figure and in order for the latter to complete. After coding the United Nations indicators<sup>3</sup> for sustainable development, they were categorized according to Bossel's six-level categorization (1999) and the corresponding categories of Maslow's pyramid (1943). This mapping is illustrated in Figure 3.

<sup>3</sup> The categorization is presented in the appendix where the 96 indicators are recorded in detail.

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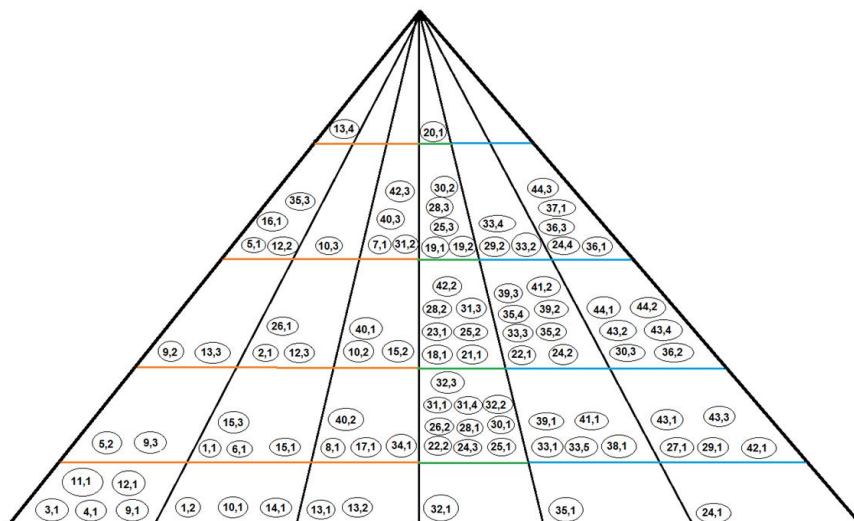


Figure 2 The indicators within the Bossel's six-level categorization

The numbers in each category represent the corresponding sustainable development indicator as listed in the appendix. Accordingly, the five levels of needs represent: 1) survival, psychological and basic needs, 2) stability needs, 3) social needs, awareness, perception and expectation, 4) needs for achievement of goals, recognition, respect and 5) Self-actualization, sustainability, integration for the individual and by extension for society respectively. In this way, the final shape of the pyramid of sustainable development is formed as below (Figure 4).

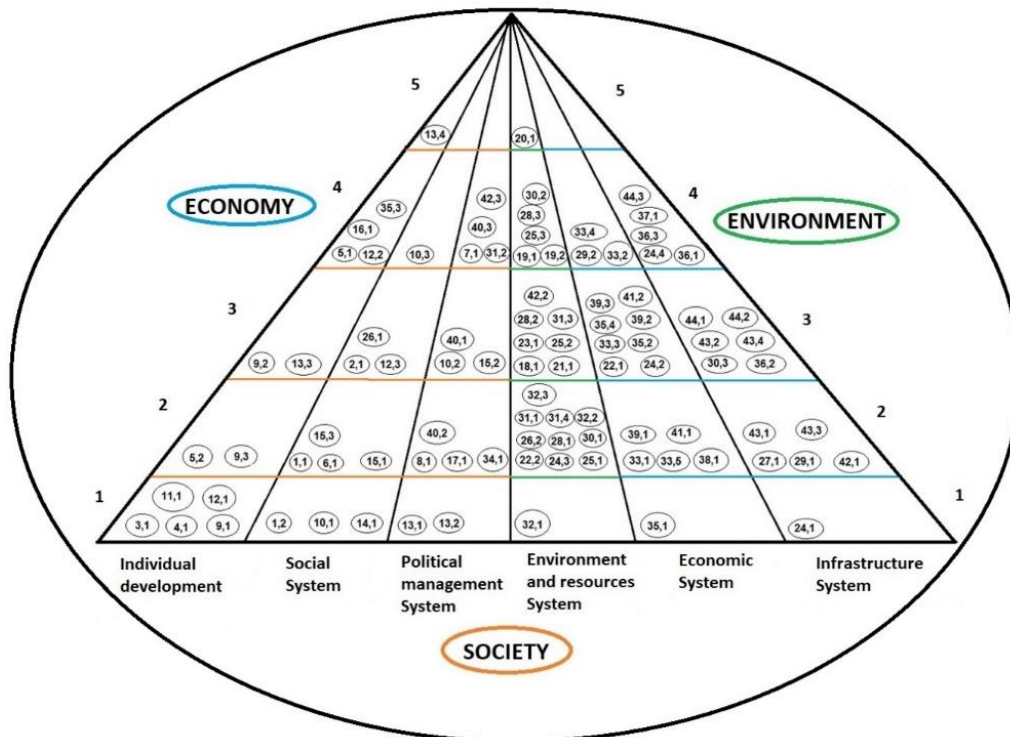


Figure 3. Sustainable development Pyramid

*Pyramidal schematic representation of the categorization of indicators*

The above pyramid diagram of indicator categorization aims at the gradual evolution of the development of individual indicator subjects in order to finally be optimized until bottom-up sustainable development occurs in each category or group which is under improvement.

### Stages - Conditions for sustainable local development

During the analysis of the sustainability of a place, it is important to have an analysis framework which is governed by three important main axes (Nijkamp and Ouwersloot, 1997). These axes are: a) the identification of a group of indicators of sustainable

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development, b) the establishment of measurable reference values such as the carrying capacity or the critical load (critical threshold value) and others, and c) the development of a practical methodology of impact for assessing future achievements.

According to the above, sustainability is also part of the planning for the development of places, regions, spatial planning as well as setting policies, something that have also been seen in Greece since the end of the 90s (Delladetsimas, 1997), where while in several European countries it became a reality and a lever for development, in Greece it remained a concept in a form of a goal. However, the achievement of sustainable development at the global level requires that the states and primarily the regions have managed to be in a state of sustainable local development (Nijkamp, Laschuit and Soeteman, 1991), with the reverse being extreme and even utopic. All local societies are characterized as open systems because they are mutually influenced by other societies in various sectors. Such sectors are trade, agriculture, tourism and many more. In special cases there are local systems or societies which are self-sufficient, even these interact with others, with the only difference being their lesser degree of dependence. On this basis, the two-way form of "influence" of sustainability is justified as well as the existence of a closed self-sufficient local system is impossible. This is easily understood if, for example, we take states as regions and the international system as a super-region instead of local regions and the state as a super-region. Something similar was noticed in the 2007 – 2013 period, where the goal of the European Union was sustainability as well as social and economic development through strengthening specific urban centers, with sustainable development focusing on specific urban centers of each country, metropolitan and regional level (Mitoula, 2010). Since 2016, an intense and collective effort to achieve sustainable development takes place, under the umbrella of the United Nations, specifically through Agenda 2030 (United Nations, 2015) which sets goals, measurable reference values as well as proposes a methodology for measurement and information feedback regarding the extent to which it is being achieved through the 17 goals it established. In this direction, all UN member states are called upon to act in specific ways and in specific directions in order to achieve sustainability in development. As pointed out, such effort should indeed be collective and not individual. Such thing, recently (2016-2019) seems to be happening as shown in the review of National Reports of the department of economic and social affairs (DESA, 2016-2019) of the U.N. in which Greece also participated by sending a report in 2018.

It is worth mentioning some points of this review which shows that for the interested parties, information is increasing, priorities are being structured in the states, coordination and establishment of governmental structures towards the 2030 agenda, states are participating in the reviews and synergies are being established with non-governmental factors. Nevertheless, the way states report as well as the control of progress at a national level seem to be limited. The progress reporting in 2017 was 70% while in 2019 it was 32% with an upward trend in information through internet. In any case, from the above it appears that there is a clear intention of the states involved for a collective course towards sustainable development while specific procedures of actions and control of the conditions are followed. These procedures, are acted upon with quality criteria as the feedback of the results is collected and evaluated by a central organization.

As mentioned by MacKinnon, Clumbers and Chapman (2002), the undermining of national economic cohesion has reduced the state's control over investment flows, thus affecting the regions by leaving them exposed to international competition. According to Porter (1990), regions, and by extension nations, could maximize their competitive advantage by developing specialized clusters of interrelated industries. Analyzing the above sentence in terms of Greece, it is easy to understand that since tourism is one of the most important economic factors of the country along with shipping, the industries interrelated with it are the key for regional development and the development of the country respectively. In particular, linking the competitive advantage of a place in parallel with tourism, could maximize this competitive advantage aiming at economic growth. After all, sustainable development in one place is not necessarily sustainable in another (Nijkamp and Ouwersloot, 1997), but depends on the place itself and its state concerning its carrying capacity. What is certain is that local regional sustainable development must ensure good living conditions for the local population of the region in the present and maintain them in the future, as well as this development must not contradict sustainable development at supra-regional level (Nijkamp, Laschuit and Soeteman, 1991). The various regions as well as two places differ from each other on many levels and mainly on the level of natural resources, environment and productivity structure. These factors alone are enough for two different regions to need completely different sustainable development practices. As Nijkamp, Laschuit and Soeteman (1991) conclude, when it comes to regional development, a form of central authority is required to assign responsibilities and make regional policy. When something like this exists, just like in Greece that there is the intention for sustainable development as it has been put officially on the agenda of previous governments (Government Gazette 128 A), then the regional authority is the one that is called upon to carry out solutions and act in such way in order to achieve both regional and supra-regional sustainable development. Another example of central authority decision aiming to regional development, is the Urban program of 1994 and other programs of the European Union with anticipation for urban upgrade of Union's member countries. The specific programs of the E.U., beyond their obvious results,

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protected the cultural heritage of the cities, set a goal for sustainable development mainly with JASPERS and Urban 2<sup>4</sup> programs (Mitoula, 2010), tourism and others (Mitoula, 2002), thus revealing the importance of such actions both at the European level but mainly at the level of a country or even a place.

### Sustainable development pyramid

The sustainable development pyramid was depicted above after the correlation and combination of Maslow's pyramid of needs, Bossel's categories of sustainable development indicators and the United Nations indicators (Figure 4). In this specific correlation in the form of a pyramid, correspondences of certain indicators with aspects of tourism and sports activities are observed. Especially for Greece these matchings are of major interest since tourism sector competitiveness is particularly important, especially for those countries that their local or regional economy is based on the tourism sector (Gooroochurn & Sugiyarto, 2005). These indicators are:

1) Indicator 8.1 referring to crime. Through sports activities and their positive effect on physical and psychological level, a reduction in the tendency to crime has been observed. This is the conclusion of Jugl, Bender and Losel (2021), who found that sports programs are able to prevent crime and related behaviors as well as to reduce their reappearance, while at the same time having a positive influence on psychological factors.

2) Indicator 9.2 concerning life expectancy, since it has been proven that sports and physical activity contribute catalytically to its increase. To this conclude Ekelund, Tarp, Steene-Johannessen et. all (2019), who in their study, where they included 39 other similar studies, provide clear scientific data for the positive correlation between physical activity and life expectancy. Specifically, the longer the period of physical exercise, even of low intensity, the lower the chance of premature death.

3) Indicator 12.3 concerning suicidal rates, where a reduced tendency has been observed to those who do sports both for males and females as Sabo, Miller, Melnick, Farrell and Barnes (2005) concluded through a survey of a sample of 16,000 young Americans, through their participation in sports activities.

4) Indicator 16.1 which concerns the ratio of a tourist destination permanent residents in relation to the number of incoming tourists. This indicator is being satisfied at least in the case of Greece. At a national level, this ratio is almost 35% with 11 million residents<sup>5</sup> to 31 million inbound tourists in 2019<sup>6</sup>, while similar figures recorded at local level which indicate a much higher ratio of tourists to permanent residents.

5) Major sporting events and large sports centers have been criticized for their negative impact to the environment. Tourism in the classical sense of the term as mass tourism, has a similar negative impact on the environment. Sports in the light of physical exercise and sports tourism as an alternative form of tourism, however, are two activities that can protect and preserve the environment in which they are carried out without altering it. Also, through sports tourism and the application of sports ideals, a more environmentally friendly way of life is promoted, such as the use of bicycle instead of motorized vehicles or the use of rowing boats instead of motorized in order to explore beaches and others. Through combined effort for alternative forms of tourism and green sports with investments in sustainable development and environmentally friendly buildings, there is a significant contribution to environmental protection and the indicator 22.2 that concerns non-degradation of the land as well as to other factors for sustainable development as recently highlighted by the World Tourism Organization (UNWTO, 2019).

6) Indicator 25.3 regarding forests. Sports and sporting activities such as mountain biking, walking tourism and others, contribute positively to forest protection and preservation, especially since they need them to take place. In this way, efforts should be made for their institutional protection and their promotion to protected areas and natural places for carrying out specific sports activities. Something similar has been pointed out by the Council of the European Union in the program 2021-2024<sup>7</sup> concerning green sports, which aims to develop sports in the light of climate change and conduct environmentally friendly sports activities and events, alongside education for sustainable sports. It is important to mention that there are references concerning investments in sports and physical exercise in order for them to contribute to regional development.

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<sup>4</sup>[http://europa.eu/legislation\\_summaries/employment\\_and\\_social\\_policy/social\\_inclusion\\_fight\\_against\\_poverty/g24209\\_el.htm](http://europa.eu/legislation_summaries/employment_and_social_policy/social_inclusion_fight_against_poverty/g24209_el.htm)

<sup>5</sup> From the 2011 census, as presented on the statistics.gr, website of the Hellenic Statistical Authority in "Greece in numbers" edition (April-June 2021)

<sup>6</sup> With data from the Bank of Greece's border survey for the period 2010-2020, as presented on the insete.gr website of INSETE (Institute of the Association of Greek Tourism Enterprises)

<sup>7</sup> Resolution of the Council and of the Governments Representatives of the Member States, meeting within the Council, concerning the program for sport of the European Union (1 January 2021 — 30 June 2024), (2020/C 419/01) [https://eur-lex.europa.eu/legal-content/EL/TXT/PDF/?uri=CELEX:42020Y1204\(01\)&from=FR](https://eur-lex.europa.eu/legal-content/EL/TXT/PDF/?uri=CELEX:42020Y1204(01)&from=FR)

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7) Similar to the indicator mentioned above, conditions are formed so that certain sports activities such as open sea swimming and diving to become a lever towards the increase of marine protected zones (indicator 28.1), in accordance with what the Greek state defines as protected zone and the characterization of an areas as protected<sup>8</sup>. Such actions, in the form of protecting the seas and beaches of Greece, have started to happen within groups of volunteers gathering to clean beaches as a recreational activity with environmental awareness and through targeted actions by groups of divers to clean the seabed. In a research conducted by Kounanis, Scanavi, Koukoulis and Maripas (2017), it is found that diving tourism contributes to the sustainability of a place and has a responsibility to minimize its own effects but also the possibility of playing a positive role in the effort to solve global environmental problems.

8) The contribution of tourism and sports to the GDP per resident of a country (indicator 33.1 of the pyramid) is now a given, specifically for Greece, where tourism is one of the country's most important industries. In particular, the contribution of tourism to the GDP of Greece in 2019 amounted to 23.1 billion euros (INSETE, 2021) from the total GDP of 183.3 billion euros for the same year, which corresponds to a percentage of 12.6% of GDP and therefore per capita where the percentage remains the same.

9) Corresponding to the above, tourism and sports occupy a large part of the 33.2 indicator concerning the share of investments in GDP. Especially with further investments in these sustainable industries, this could happen on an annual basis in order for the tourism product and the sports infrastructures to be constantly at a high level, as IOBE research shows, which was presented at an international conference of the "Kokkalis" foundation. According to the data of the research, in 2000 the participation of sports in the GDP of Greece amounted to two billion euros or 1.7%. The sector's consumer spending was 2.2 billion euros or 2.5% of total consumer spending, while 43,297 jobs were created. Accordingly, for the tourism sector as presented above, these figures are even bigger with the contribution of tourism to Greece's GDP being 12.6% and the investment expenditure amounting to 3.2 billion euros (INSETE 2021) while as a percentage of total GDP represents 1.75%.

10) Indicator 35.1, which concerns the employment rate of the population, is being satisfied to a significant extent through tourism as well as through sports. In particular, 12.4% of all employees in Greece work in tourism sector, meaning 572,400 employees. Accordingly, 0.7% of the population are employed in sports with 32,212 employees for 2020 according to the published data of the Hellenic Statistical Authority<sup>9</sup> (2021). The above figures highlight the opportunities and potentiality for employment provided by the specific sectors of economic activity.

11) Share of women in wage employment in the non-agricultural sector, as referred by the indicator 35.3. That share is already very high in the tourism sector and in sports as well compared to other sectors. Specifically, in the tourism sector of Greece, the percentage of female employees amounts to 48% compared to 40.8% in the other sectors for 2018, as shown by a study of INSETE (2019). Accordingly, in the sports sector, for 2017 among young people up to 34 years of age, employment for young women amounts to 44.3% and for young men to 55.7% of a total of 10,619 young workers, according to data shown by the Hellenic Statistical Authority for 2018<sup>10</sup>. The above figures satisfy indicator 35.3 since the corresponding percentages for employment in other sectors are 59.2% for men and 40.8% for women (INSETE 2019).

12) Indicator 38.1 which concerns the contribution of tourism to the GDP and as it has been seen from the present research and the literature, sport contributes positively to the development of the tourism product as it presents opportunities for new tourism activities, to the extent that there is the special category of sports tourism. It is also worth mentioning the fact that tourism in Greece already contributes directly to 12.6% of GDP for 2019 and in total (directly and indirectly) contributes more than 27.7% of GDP (INSETE 2021). The corresponding percentage for 2019 regarding the contribution of world tourism to global GDP is 10.4% (WTTC, 2021).

### CONCLUSIONS

It is therefore directly noticeable that both tourism and sports contribute positively to 12 of the 96 indicators of sustainable development, constituting to 12.5% of a country's efforts in this direction. Specifically, 5 social indicators, 3 environmental indicators and 4 economic indicators are satisfied. Accordingly, 3 indicators concern the system of individual development, 1 the social system, 1 the political management system, 3 the resource and environment system, 4 the economic system and none the infrastructure system. Also, the contribution of sports and tourism to sustainable development concerning the individual

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<sup>8</sup> Article 46, concerning the Modernization of Environmental Legislation of the Ministry of Environment and Energy of Greece, <http://www.opengov.gr/minenv/?p=10222>

<sup>9</sup> <https://www.statistics.gr/el/statistics/-/publication/SEL21/->

<sup>10</sup> [https://www.statistics.gr/documents/20181/12044283/elstat\\_publication\\_young\\_2018\\_gr.pdf](https://www.statistics.gr/documents/20181/12044283/elstat_publication_young_2018_gr.pdf)



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indicators, satisfy 1 indicator in the first layer of the pyramid, 5 indicators in the second, 2 indicators in the third and 4 indicators in the fourth, with no contribution in the fifth and last layer concerning self-actualization indicators. The figure below provides a schematic illustration of the indicators that are satisfied within the pyramid.

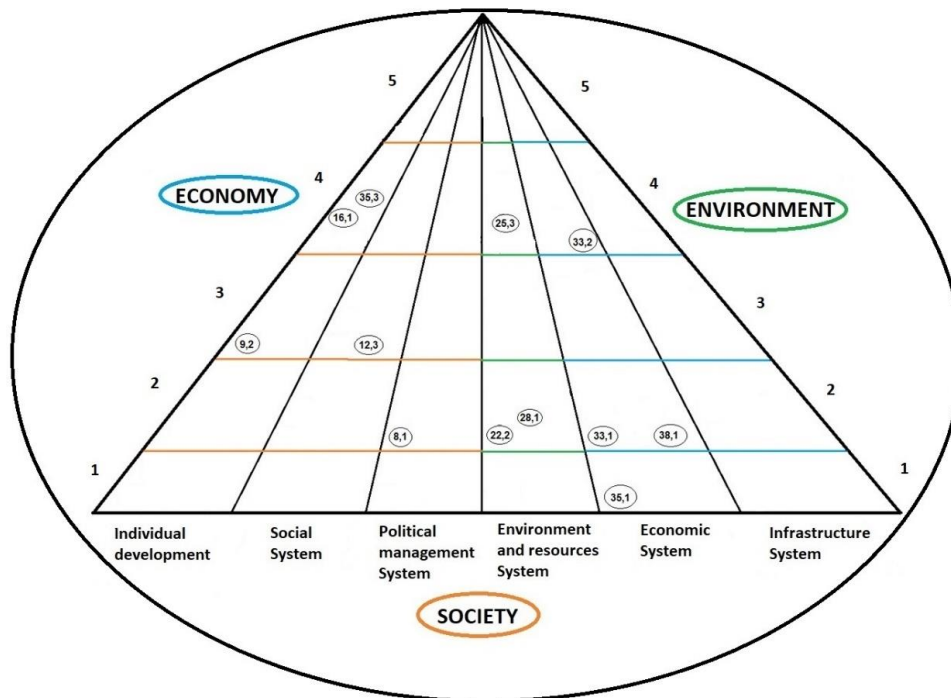


Figure 5. Sustainable development indicators which are satisfied by sports ant tourism

It is worth mentioning that according to the above, the activities of tourism and sports seem to contribute positively to the direction set by the 17 goals for sustainable development. This happens due to the fact that that these goals have largely come from the above predetermined<sup>11</sup> sustainable development indicators. The goals that seem to be satisfied, are those that are directly related to the 12 indicators analyzed above and included in the pyramid illustration. They are: Goal 3 regarding health (indicator 9.2) and through sports activities has shown the significant improvement of health for the people who participate in such activities as well as on a mental level as observed in the description of indicator 12.3 regarding suicides and therefore mental health. Goals 1,2,8 and 9 (indicators 33,1 / 33,2 / 35,1 and 38,1) with the contribution of both tourism and sports to the GDP, to the provision of work, to investments and by extension to the reduction of poverty and hunger as explained above in the corresponding description. Goal 5 concerning gender equality and the empowerment of women according to the description of the previously presented indicator 35.3. Also, to a degree, the direction of reducing the environmental footprint of tourism and sports respectively, it is observed a significant progress of these two activities towards the direction set by goals 14 and 15 corresponding to the description of indicators 22.2 / 25.3 and 28.1 which concern the environment and especially the forests, the sea and earth degradation. According to the above, tourism and sports, respectively, appear to have a degree of contribution towards sustainable development in 8 of the 17 goals set by the United Nations for 2030, which is of course very important since they appear to have a relation with the 47% of the goals. However, it is not of particular concern in the present research for the simple reason that the contribution of sports and tourism is interesting and essential to be researched on the basis of the result (indicators) and not the targeting of a purpose (goals). Nevertheless, sports and tourism on the one hand, contribute to the goals set for sustainable development by 47%, but on the other hand, they have a particularly important contribution to the individual indicators for sustainable development (by 12.5%), where their contribution becomes tangible and measurable, since the more indicators are satisfied, the closer to sustainable development is the objective under research.

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<sup>11</sup> The goals were set in 2015 after the indicators had been set in 2007, and were shaped taking into account those pre-determined indicators.

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### APPENDIX

- 1) Income poverty (2 indicators) - Proportion of population living below national poverty line (1.1) and Proportion of population below \$1 a day (1.2).
- 2) Ratio of share in national income of highest to lowest quintile (2.1).
- 3) Sanitation - Proportion of population using an improved sanitation facility (3.1).
- 4) Drinking water - Proportion of population using an improved water source (4.1).
- 5) Access to energy (2 indicators) - Share of households without electricity or other modern energy services (5.1) and Percentage of population using solid fuels for cooking (5.2).
- 6) Living conditions - Proportion of urban population living in slums (6.1).
- 7) Corruption - Percentage of population having paid bribes (7.1)
- 8) Crime - Number of intentional homicides per 100,000 population (8.1).
- 9) Mortality (3 indicators) - Under-five mortality rate (9.1), Life expectancy at birth (9.2) and Healthy life expectancy at birth (9.3).

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- 10) Health care delivery (3 indicators) - Percent of population with access to primary health care facilities (10.1), Immunization against infectious childhood diseases (10.2) and Contraceptive prevalence rate (10.3).
- 11) Nutritional status - Nutritional status of children (11.1).
- 12) Health status and risks (3 indicators) - Morbidity of major diseases such as HIV/AIDS, malaria, tuberculosis (12.1), Prevalence of tobacco use (12.2) and Suicide rate (12.3).
- 13) Education level (4 indicators) - Gross intake ratio to last grade of primary education (13.1), Net enrolment rate in primary education (13.2), Adult secondary (tertiary) schooling attainment level (13.3), and Life long learning (13.4).
- 14) Literacy – Adult literacy rate (14.1).
- 15) Population (3 indicators) - Population growth rate (15.1), Dependency ratio (15.2) and Total fertility rate (15.3).
- 16) Tourism - Ratio of local residents to tourists in major tourist regions and destinations (16.1).
- 17) Vulnerability to natural hazards - Percentage of population living in hazard prone areas (17.1).
- 18) Disaster preparedness and response - Human and economic loss due to natural disasters (18.1).
- 19) Climate change (2 indicators) - Carbon dioxide emissions (19.1) and Emissions of greenhouse gases (19.2).
- 20) Ozone layer depletion - Consumption of ozone depleting substances (20.1).
- 21) Air quality - Ambient concentration of air pollutants in urban areas (21.1).
- 22) Land use and status (2 indicators) - Land use change (22.1) and Land degradation (22.2).
- 23) Desertification - Land affected by desertification (23.1).
- 24) Agriculture (4 indicators) - Arable and permanent cropland area (24.1), Fertilizer use efficiency (24.2), Use of agricultural pesticides (24.3) και Area under organic farming (24.4).
- 25) Forests (3 indicators) - Proportion of land area covered by forests (25.1), Percent of forest trees damaged by defoliation (25.2) and Area of forest under sustainable forest management (25.3).
- 26) Coastal zone (δύο δείκτες) - Percentage of total population living in coastal areas (26.1) and Bathing water quality (26.2).
- 27) Fisheries - Proportion of fish stocks within safe biological limits (27.1).
- 28) Marine environment (3 indicators) - Proportion of marine area protected (28.1), Marine trophic index (28.2) and Area of coral reef ecosystems and percentage live cover (28.3).
- 29) Water quantity (2 indicators) - Proportion of total water resources used (29.1) and Water use intensity by economic activity (29.2).
- 30) Water quality (3 indicators) - Presence of faecal coliforms in freshwater (30.1), Biochemical oxygen demand in water bodies (30.2) and Wastewater treatment (30.3).
- 31) Ecosystem (4 indicators) - Proportion of terrestrial area protected, total and by ecological region (31.1), Management effectiveness of protected areas (31.2), Area of selected key ecosystems (31.3) and Fragmentation of habitats (31.4).
- 32) Species (3 indicators) - Change in threat status of species (32.1), Abundance of selected key species (32.2) and Abundance of invasive alien species (32.3).
- 33) Macroeconomic performance (5 indicators) - Gross domestic product (GDP) per capita (33.1), Investment share in GDP (33.2), Gross saving (33.3), Adjusted net savings as percentage of gross national income (GNI) (33.4) and Inflation rate (33.5).
- 34) Sustainable public finance - Debt to GNI ratio (34.1).
- 35) Employment (4 indicators) – Employment-population ratio (35.1), Labor productivity and unit labor costs (35.2), Share of women in wage employment in the non-agricultural sector (35.3) and Vulnerable employment (35.4).
- 36) Information and communication technologies (3 indicators) - Internet users per 100 population (36.1), Fixed telephone lines per 100 population (36.2) and Mobile cellular telephone subscribers per 100 population (36.3).
- 37) Research and development - Gross domestic expenditure on R&D as a percent of GDP (37.1).
- 38) Tourism - Tourism contribution to GDP (38.1).
- 39) Trade (3 indicators) - Current account deficit as percentage of GDP (39.1), Share of imports from developing countries and from LDCs (39.2), Average tariff barriers imposed on exports from developing countries and LDCs (39.3).
- 40) External financing (3 indicators) - Net Official Development Assistance (ODA) given or received as a percentage of GNI (40.1), Foreign direct investment (FDI) net inflows and net outflows as percentage of GDP (40.2) and Remittances as percentage of GNI (40.3).
- 41) Material consumption (2 indicators) - Material intensity of the economy (41.1), Domestic material consumption (41.2).
- 42) Energy use (3 indicators) - Annual energy consumption, total and by main user category (42.1), Intensity of energy use, total and by economic activity (42.2) and Share of renewable energy sources in total energy use (42.3).

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- 43) Waste generation and management (4 indicators) - Generation of hazardous waste (43.1), Waste treatment and disposal (43.2), Generation of waste (43.3) and Management of radioactive waste (43.4).
- 44) Transportation (3 indicators) - Modal split of passenger transportation (44.1), Modal split of freight transport (44.2) and Energy intensity of transport (44.3).



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