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The Study of Quality of Life as a Guide to Urban Regeneration Analysis of Estepona's New City Hall as a Sustainable Model

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Abstract: Given the immersion of cities in a global situation of social emergency since the latest environmental and health events, current research on increasing the quality of life of citizens has become a priority in the attempt to provide the set of sustainable strategic conditions that must be met in favour of the necessary urban regeneration associated with the improvement of the habitable environment. Thus, being directly concerned by this matter, the construction of new buildings will have to follow concordant dynamics aiming at the improvement of the quality of life of their users and of the city as a whole, thus contributing to their mandatory healthy, habitable and equitable nature. It is necessary to redefine in the design of buildings certain potential criteria with a positive effect on the quality of life. These can be grouped into the following five key factors that define architectural work in relation to its habitability conditions: identity, character, image, materiality and implementation. These quality-of-life descriptors are assessed in a particular building, which serves as a real case study as follows: the new town hall of Estepona (Malaga, Spain). The aim is to provide an answer to the potential use of indicators that determine the improvement of the quality of life provided by a building in the city as a whole. The fact that it is a public building also turns it into a model of management that is consistent with the requirements of sustainable environmental progress in the general interest of a socially just city.

Keywords: sustainable architecture; environmental buildings; quality of life; healthy architecture; urban regeneration

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1. Introduction

The relationships between the inhabitants and the city as interconnected entities were analysed against the orthodoxy of the modern movement by Reyner Banham in his book *Los Angeles: The Architecture of Four Ecologies* (1971) as the result of the following four topographical subsystems: the beach area (surfurbia), the motorway network (autopia), the plains and the hills with their large mansions, on each of which the variables of geography, climate, economy, demographics, technology and culture acted [1]. This reference allows us to enter into contemporary urban ecology as a current issue that we are interested in developing. Moreover, the above reference is shown as a similar configuration to the structure of the urban region under analysis in this case study, currently understanding the value that restorative qualities acquire in contact with the natural physical environment as an additional resource to promote positive interactions with the city (Kleinschroth and Kowarik 2020; Slater et al., 2020) [2,3].

Thus, in the face of widespread environmental awareness and the need for urgent measures, the architectural quality of the built objects in the city and the perception of improved quality of life as a healthy experience for the individual need to be identified in a coordinated manner in order to make it possible to "meet the needs of the present without compromising the ability of future generations to meet their own needs" [4] (p. 15). In "*Our Common Future*" 1987 report of the World Commission on Environment and Development of the United Nations Assembly, this is confirmed by the possibility of achieving economic growth based on sustainable development policies, a development that protects human progress into the future and the expansion of environmental resources [4].

The disproportionate growth of town planning, together with a detachment from the natural environment, has caused numerous negative effects on people's physical and mental health (Pelczynski, 2019; Taylor and Kuo, 2006) [5,6]. The aim is to understand the factors that operate in favour of well-being and the perception of life quality (Corraliza and Collado, 2011), such as the moderating effect of enjoying greater contact with green areas [7]. The so-called welfare city (Barton & Grant, 2017) is based on a rethinking of the relationships between inhabitants, the urban environment and nature that are set to endure and prevail over temporary emergencies (Figure 1) [8]. Notably, the "*Limits to Growth*" report of 1972, commissioned by the Club of Rome, demonstrated the vulnerability of the global production system, warning about the irreversible environmental consequences of the unlimited development model and the unsustainable increase in the ecological footprint based on the depletion of natural resources and its negative impact on the future urban environment [9].

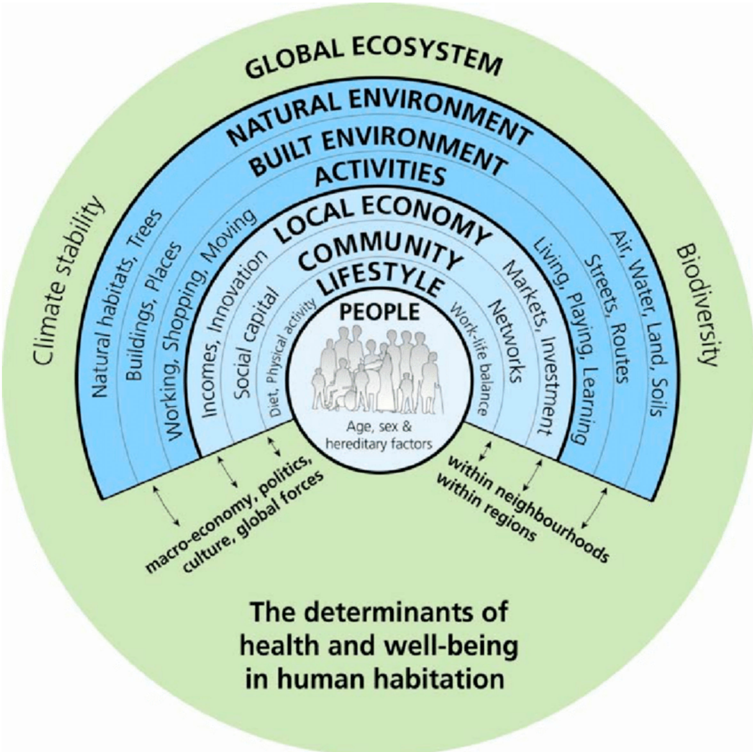


Figure 1. The Settlement Health Map. Source: Barton & Grant, 2006 [8].

Consequently, the architectural project as a proposal in the built environment must meet—among others—the requirements of environmental energy autonomy without interfering with the qualities of the landscape and incorporating sustainable practises that improve the efficiency and consumption of resources aimed at the building's own uses. This means that open space considerations will be taken into account as indivisible parts of the built space, with no negative impact on matters related to land's natural values (Higueras-García, E.; Ezquiaga-Domínguez, J.M., 2022) [10].

The definition of quality of life currently represents a topic of growing interest, and its association with urban regeneration has implications in the fields of health, architecture, economics, humanities, urban design, education and culture, amongst others (Figure 2).

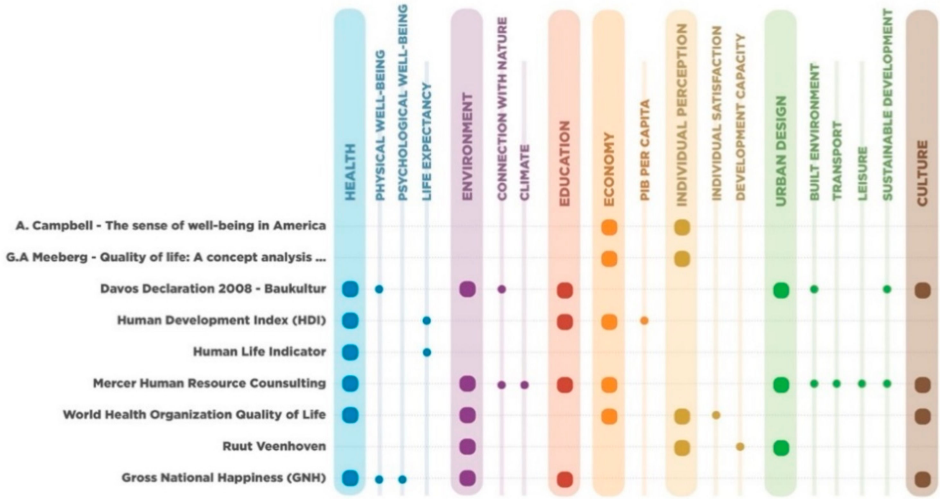


Figure 2. Summary diagram of factors influencing quality of life according to the literature of this study. Source: Compiled by the author.

Since the approach to quality of life as a social attribute gained momentum in the sixties of the twentieth century, when authors such as A. Campbell (1981) and G. A. Meeberg (1993) proposed the weight of individual qualitative variables as a necessary complement to the original metrics for economic status, it can be stated that the interest in adequately and scientifically characterising the concept has been evolving towards more integrative criteria and diverse characteristics [11]. Beyond the subjective indicators relating to the individual psychological perception of the concept of quality of life, which would complete the variation in the degree of satisfaction once added to the objective data, in order to defend the need to introduce psychological indicators in the determination of the variance in quality of life, the healthy characteristics of the physical environment, associated with the urban environment, with proven influence in obtaining high standards of recognition of the quality of life can be found (Nasution, 2019) [12].

The World Health Organization Quality of Life (WHOQOL) working group, created in 1995 by the World Health Organization (WHO) for research on the quality of life and the description of its weighting possibilities, introduced the correlation between objectively measurable multidimensional parameters and the perceived self-report of personal satisfaction as a methodological criterion for the potential comparison between different states of quality of life [13].

In this sense, the HDI indicator (Human Development Index), established by the United Nations Development Programme (UNDP-1990) and referring to each country, is frequently used [14]. It relates the three major demanded areas, assuming their interconnection, that is, health (life expectancy), education (schooling) and the economy (GDP per capita), to assess an assessable and comprehensive relative average state, based on the specific instruments of each one of them in relation to the fulfilment of certain standards and expectations. The Human Life Indicator, developed by the International Institute for Applied Systems Analysis (IIASA), is a new international comparative ranking for quality of life that has been imposed as an alternative and replacement for the HDI indicator. The Human Life Indicator, recently developed by the International Institute for Applied Systems Analysis (IIASA), is an alternative to the Human Development Index (HDI) by the United Nations. Its argument is based on the relative deviation of the birth-mortality extremes, averaging the percentages of greater longevity with respect to premature deaths [15].

Recently, there has been growing awareness of a substantial factor, which although it is not new, does seem to be at the heart of much of the debate. Indeed, the Davos Declaration (January 2018) *Towards a high-quality Baukultur for Europe* links the concept of "quality of life", as the ultimate goal to be achieved, to factors that have a direct impact on the design of the built and natural environment and on the sustainable development of cities. The Davos Declaration (2018) introduces the concept of "architectural quality" as a necessary guarantee, with national legislative status, to obtain a degree of the universal right to quality of life. An intangible, value-judgement parameter is reintroduced, pending classification as a new complex variable in the conceptual equation [16].

Similarly, in March 2019, Mercer Human Resource Consulting presented its latest global quality of life ranking for 215 cities worldwide (out of a total of 440 cities analysed), in order to guide large institutions and multinational corporations in moving their employees away from their original homes to the most attractive destinations. In a new attempt to define the high-impact components of people's everyday lifestyles, the report assessed 10 categories and 39 different factors, grouped into economic, socio-political, cultural, environmental, health and education, services and transport, leisure, natural environment, consumer goods and housing contexts [17].

From a holistic point of view of development focusing on the achievement of public welfare policies, the Dutch researcher and sociologist Ruut Veenhoven (1942) mainly introduces the habitability of the environment as a condition of external quality and the individual's capacity for development as a variable of internal quality, which directly relates opportunities with the results obtained expressed in practical utility and subjective appreciation [18]. Veenhoven proposes a comprehensive framework of multidimensional relationships for the reliable measurement and study of the quality of life of different societies in the same sense as the United Nations' President, Ban Ki-moon, associated it with the right to happiness in the spirit of the Millennium Development Goals (MDGs) in the resolution adopted by the 2011 General Assembly session. Lhatu Wangchuk, Bhutan's ambassador to the UN, representing King Jigme Singye Wangchuck, led the initiative by advocating at the 74th plenary session (14 January 2011) the yearning and need to achieve a fulfilling, meaningful and happy life as a fundamental goal for social development, based on a new satisfaction indicator for the quality of life, called the Gross Domestic Happiness Index (GDP), away from more conventional socio-economic models of wealth. The factors to be considered for the sustainable development of the GDP with strong qualitative weighting are the following: psychological well-being, health promotion, education, good governance, impact on the community's vitality, environmental conservation and cultural promotion.

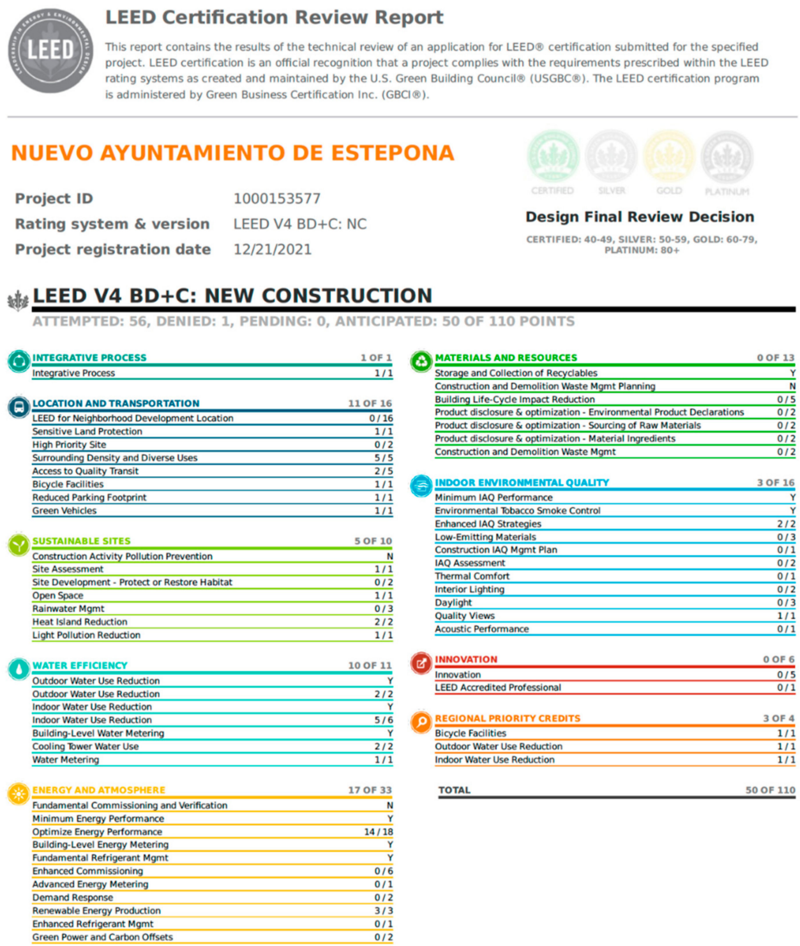
Thus, the extent to which existing cities, as dynamic physical frameworks of potential transformation, present themselves as places that facilitate accessibility, comfort, utility, diversity, security, prosperity, etc., will determine their capacity to provide a quality of life to the population. Citizens need to be aware of the dependent factors that increase or decrease their personal assessment in relation to levels of quality of life in their urban context.

Health risks associated with urban inequalities have been explored and reported in the document jointly published by the World Health Organization and the United Nations Human Settlements Programme (2010) [19]. Multiple scientific studies place health equality on the political agenda of European cities, highlighting the relevance of aspects relating to the physical environment, mainly the built environment. They aim to analyse different patterns of health inequalities in urban areas and to describe policies to reduce them in European cities [20]. Moreover, in the socio-economic environment in order to achieve a higher quality of life (Northridge, 2003; Evans, 2003; Haines et al., 2012; Borrell et al., 2013; Carnemolla, 2016; Chen, 2017) [21–26]. The study of urban regeneration associated with quality of life as a topic of international interest that is key to sustainable urban development, with a particular focus on health promotion. In particular, the population's globally acquired awareness of climate change issues at the same time as the so-called Social Determinants of Health (SDH) has led to an increased sensitivity to the use of strategies that can be integrated into an ever-changing built environment [27]. Health, understood as the predominance of positive social well-being, according to the OECD report (2002), is framed as a strategic objective of global policy in order to design urban centres that improve health and well-being. The objective of promoting policies and actions for healthy and sustainable development at the local level, which emphasizes equality in health and the principles of the European policies "Health for All and Health 2020" as the objective of improving quality of life, is especially meaningful [28].

2. Materials and Methods

In order to recognise the influencing factors that intervene in the condition of habitability with regard to the perception of quality of life, the starting point is on the one hand the bibliographical study of references of publications in journals of scientific impact and consolidated authors on the subject of quality of life, sustainability and urban regeneration as research tools, as well as the indicators proposed by governmental, European or world organisations on the subject. On the other hand, in terms of the new town hall building of Estepona as a case study of habitability conditions, the original technical architectural documentation of the project, the data used in the numerical simulation analysis of the design for decision-making and the construction process represent primary sources of information, as well as the precise information on the structure, installations, materials and the execution of the different stages of the work.

As a final reference support, we have availed of the documentation generated by the specialised consultancy in charge of verifying the degree of compliance with the certification criteria required by the Leadership in Energy and Environmental Design (LEED) accreditation seal and the results evaluation report (Figure 3).



LEED Certification Review Report

This report contains the results of the technical review of an application for LEED® certification submitted for the specified project. LEED certification is an official recognition that a project complies with the requirements prescribed within the LEED rating systems as created and maintained by the U.S. Green Building Council® (USGBC®). The LEED certification program is administered by Green Business Certification Inc. (GBCI®).

NUEVO AYUNTAMIENTO DE ESTEPONA

Project ID	1000153577
Rating system & version	LEED V4 BD+C: NC
Project registration date	12/21/2021

CERTIFIED SILVER GOLD PLATINUM

Design Final Review Decision

CERTIFIED: 40-49, SILVER: 50-59, GOLD: 60-79, PLATINUM: 80+

LEED V4 BD+C: NEW CONSTRUCTION

ATTEMPTED: 56, DENIED: 1, PENDING: 0, ANTICIPATED: 50 OF 110 POINTS

INTEGRATIVE PROCESS	1 OF 1
Integrative Process	1 / 1

LOCATION AND TRANSPORTATION	11 OF 16
LEED for Neighborhood Development Location	0 / 16
Sensitive Land Protection	1 / 1
High Priority Site	0 / 2
Surrounding Density and Diverse Uses	5 / 5
Access to Quality Transit	2 / 5
Bicycle Facilities	1 / 1
Reduced Parking Footprint	1 / 1
Green Vehicles	1 / 1

SUSTAINABLE SITES	5 OF 10
Construction Activity Pollution Prevention	N
Site Assessment	1 / 1
Site Development - Protect or Restore Habitat	0 / 2
Open Space	1 / 1
Rainwater Mgmt	0 / 3
Heat Island Reduction	2 / 2
Light Pollution Reduction	1 / 1

WATER EFFICIENCY	10 OF 11
Outdoor Water Use Reduction	Y
Outdoor Water Use Reduction	2 / 2
Indoor Water Use Reduction	Y
Indoor Water Use Reduction	5 / 6
Building-Level Water Metering	Y
Cooling Tower Water Use	2 / 2
Water Metering	1 / 1

ENERGY AND ATMOSPHERE	17 OF 33
Fundamental Commissioning and Verification	N
Minimum Energy Performance	Y
Optimize Energy Performance	14 / 18
Building-Level Energy Metering	Y
Fundamental Refrigerant Mgmt	Y
Enhanced Commissioning	0 / 6
Advanced Energy Metering	0 / 1
Demand Response	0 / 2
Renewable Energy Production	3 / 3
Enhanced Refrigerant Mgmt	0 / 1
Green Power and Carbon Offsets	0 / 2

MATERIALS AND RESOURCES	0 OF 13
Storage and Collection of Recyclables	Y
Construction and Demolition Waste Mgmt Planning	N
Building Life-Cycle Impact Reduction	0 / 5
Product disclosure & optimization - Environmental Product Declarations	0 / 2
Product disclosure & optimization - Sourcing of Raw Materials	0 / 2
Product disclosure & optimization - Material Ingredients	0 / 2
Construction and Demolition Waste Mgmt	0 / 2

INDOOR ENVIRONMENTAL QUALITY	3 OF 16
Minimum IAQ Performance	Y
Environmental Tobacco Smoke Control	Y
Enhanced IAQ Strategies	2 / 2
Low-Emitting Materials	0 / 3
Construction IAQ Mgmt Plan	0 / 1
IAQ Assessment	0 / 2
Thermal Comfort	0 / 1
Interior Lighting	0 / 2
Daylight	0 / 3
Quality Views	1 / 1
Acoustic Performance	0 / 1

INNOVATION	0 OF 6
Innovation	0 / 5
LEED Accredited Professional	0 / 1

REGIONAL PRIORITY CREDITS	3 OF 4
Bicycle Facilities	1 / 1
Outdoor Water Use Reduction	1 / 1
Indoor Water Use Reduction	1 / 1

TOTAL	50 OF 110

Figure 3. LEED Certification Review Report accreditation document, provided by GBCe in the design phase, prior to the commissioning of the reference work, case study "New City Hall of Estepona", in accordance with the rating systems created and maintained by the U.S. CITY HALL OR TOWN HALL, PREGUNTAR Green Building Council® (USGBC®). The LEED certification programme is administered by Green Business Certification Inc (GBCI®) [29].

Nevertheless, it is necessary to recall here the opinion supported by Ken Yeang's research on Ecological Design Theory that the "active solution", from solar panels, air conditioning, building automation systems, double skin facades, as well as building accreditation ratings such as LEED, do not exclusively make up what should be understood as a total Sustainable Design. Instead, passive systems integrated into the design and connected to the natural environment are the key to sustainable design and necessary for the well-being of users (Yeang, 1995) [30].

In order to establish the degree of quality of life of a community in a specific physical framework, understood as a state of dynamic integral well-being in all its expressions, it would be necessary to have objective relative variables, which would make it possible to assess the levels of satisfaction achieved and to compare the margins for standardised improvement beyond a qualitative perception (Pérez Maldonado, 1999) [31].

The quality of life identified with a given place is the result of applying degrees of compliance and levels of individual satisfaction to various objective common universal indicators, which have the property of fixing their interaction in a perceived and verifiable daily experience mainly in the domains of economy, health, culture and environment.

In this sense, it is necessary to highlight the current importance of Dr. Sabine O'Hara's work on the Theory of Economic Development, which from the University of the District of Columbia focuses on the quality of life and economic opportunity of local communities through the development of material and social assets, intellectual and physical multidimensional capabilities. These development assets are expressed in the following five pillars of economic development: education, health, environmental quality and leisure, social and cultural services. These five pillars can be considered qualitative, yet measurable outcomes associated with a high quality of life and a high capacity for economic development and progress towards an equitable city (O'Hara, 2018) [32].

For the evaluation of the criteria present in the design of the building that serves as a real case study, the new town hall of Estepona (Malaga-Spain), which has a positive effect on the quality of life, the following five key factors or descriptors are proposed that characterise the architectural work in its habitability condition: *Identity, Character, Image, Materiality and Implementation* (Figure 4).

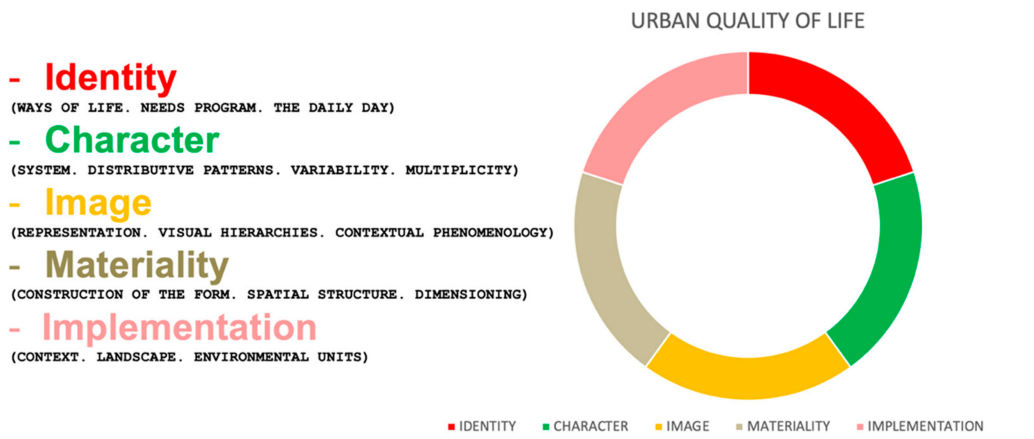


Figure 4. Key factors defining quality of life in architectural work. Source: Created by the author.

The condition of habitability has a subjective dimension associated with the personal meaning that each person can give to the objects and architecture in a given spatial context. Studies such as that of Csikszentmihalyi and Rochberg-Halton (1981) determine how the personalisation of spaces and objects is a means of expression, with which users can feel a greater degree of satisfaction with the environment by finding their own meaning based on life experience, establishing an emotional link with the place, which reinforces the sense of belonging projected towards the community, in what could be called the *identity of the architectural work* (Factor ONE) [33].

The condition of architectural habitability is not only defined by obtaining protection through thermal and acoustic comfort, but also by factors of architectural influence consistent with functionality and space (Landázuri and Mercado, 2004), in what could be called the *character of the architectural work* (Factor TWO) [34].

The need to add a phenomenological view to the condition of habitability, situated in a materialist subject-world ontology, inserting everyday ideation and conduct into the existential context of people's lives, into their immediate relationship with the contingent reality of their built space (Merleau-Ponty, 1974), is what could well be named the *image of the architectural work* (Factor THREE) [35].

Ever since Hungarian researcher Viktor Olgyay set out in 1963 in his book *Architecture and Climate*. *Bioclimatic design manual for architects and urban planners,* an authentic multidisciplinary theory applied to architectural design based on the achievement of hygrothermal comfort in four representative climatic regions (temperate zone, cold zone, warm-arid zone and warm-humid zone), based on the analysis of the site, it seeks the least environmental impact generated by the different defining elements of the built work conditioned by a specific physical environment [36]. Since then, the contextual correspondence that should be established between architecture (form) and energy (climate) to achieve a satisfactory result of *materiality* (Factor FOUR) in favour of the promotion of health, one of the most studied factors in relation to the improvement of the quality of life has been the physical conditioning of the environment, as an external factor to the individual, and the associated individual satisfaction and perception, as an internal factor. A few years later, in 1969, architect and professor of urban design Baruch Givoni (PhD in Public Health from the Faculty of Medicine of the University of Jerusalem in 1963) contributed with his book *Man, Climate and Architecture* to the parameterised definition of bioclimatic architecture as a contextual working tool of passive design for the healthy control of the indoor built environment, without excessive increase in additional energy consumption [37]. The novelty of its 1969 publication date is the incorporation of architectural design recommendations based on its well-known "Building Bioclimatic Chart", to ensure indoor comfort conditions. For the first time in 1971, British architect Carl Mahoney (together with John Martin Evans and Otto Königsberger) edited his own charts and recommendations for climate-appropriate architectural design [38]. As a result of the impact of his research, Givoni founded PLEA *(Passive Low Energy Architecture*) in 1982, an international association for the promotion of bioclimatic architecture, which is still active internationally in urban development. In both cases, the management of the balanced exchange of energy that occurs between the individual and the built object in relation to the physical environment is the key to developing the architectural project as a reference manual for improving the user's quality of life, based on the active promotion of health from a comfortable space.

Both the particular meaning attributed to urban environment by people subject toits condition of habitability, as well as the sensory bases of the related cognitive processes, represent from an environmental psychology point of view, an essential factor for the information that the individual needs to process as a member of the community. Research by T. Gärling (1998) on the different types and functions of environmental uncertainty basically concludes that people are optimisers of environmental uncertainty and that by minimising it, the level of environmental stress that is sought to obtain adequate levels of appreciation for the quality of life can be reduced into what could be called the *implementation of the architectural work* (Factor FIVE) [39].

With the aim of promoting healthy environments for the population, the Ministry of Health (Spanish Government), in coordination with the Ministry for Ecological Transition and Demographic Challenge, is implementing the Strategic Plan for Health and Environment (PESMA) until 2026, aimed at protecting the population from environmental risks. The Strategic Plan for Health and the Environment was approved at the extraordinary session of the Plenary Session of the Interterritorial Council of the National Health System and the Sectorial Conference on the Environment (November 2021) [40]. The Plan addressed the actions to be taken to reduce the impact of the main environmental factors and determinants on health. Thus, as part of a policy of control over the environmental dynamics of the city and with the aim of helping resolve new lines of development in the architecture-health binomial, a series of project parameters are undertaken in the research process that would make it possible to determine a synthetic index of comparative relative territorial vulnerability, for the evaluation of the necessary urban regeneration. This brief preview of design criteria is just an initial sample of what we would like to achieve in order to establish sustainable and healthy parameters for generating new ways of building, as well as directly improving the healthy user experience. These parameters must intervene and be quantified in the definition of appropriate architectural solutions for habitability, in which abrupt changes in temperature and excessive consumption of metabolic energy are avoided; noise pollution is reduced; the incorporation of natural cooling systems is harmoniously regulated; the management of light and control of energy use and the consumption of resources and environmental pollution reduced. This implies an effective control over the architectural factor as a social determinant of health, and therefore a decrease in health inequalities and an increase in quality of life. In this sense, the proposed basic architectural parameters for healthy living incorporated into the design process would be the following:

a. Hygrothermal regulation

Integral approach that contemplates the characterisation of thermodynamic volume, for the control of internal humidity, so as to ensure the absence of any thermal discomfort of the users, for the human body to reach thermal balance between heat input and heat loss without the need to activate its natural thermoregulation mechanisms (metabolism, sweating . . .).

b. Energy exchange

Maximum efficiency derives from energy characteristics of the environment, taking into account the climatic conditions and the specific circumstances of the physical environment.

c. Indoor air quality

The use of natural ventilation is enhanced through design strategies by adapting the architectural envelope and interior layout to achieve optimal air renewal. It will be complemented by mechanical ventilation strategies to direct air flows from outside and clean areas through natural vegetation filters to those areas that may have higher concentrations of moisture or pollutants, ensuring a continuous renewal of clean air.

d. Form factor, proprioception and occupation

The form factor is the relationship between the built volume and the enveloping surface, referring to climatic harnessing; together with proprioception, understood as the capacity to adopt the relative position of the body schema with the physical space under the conditions of an ergonomic system, and occupancy, referring to overcrowding. It primarily affects the parasympathetic nervous system and the immune system, turning the interior space into a risky breeding ground for the spread of infectious diseases.

e. Sound perception

Human perception of sound involves both the acoustic qualities of sound (pitch, intensity, tone and duration) and the acoustic qualities of space (reflection, absorption, etc.).

f. Construction and material efficiency

Via the life cycle analysis of materials and construction processes employed, there is a guarantee on the use of technologies and delivery systems that require as little energy and raw materials as possible, while generating as little waste and toxic emissions as possible at all stages of their life cycle as follows: extraction of raw materials; processing and manufacture; distribution and transport; commissioning; use and waste management

g. Living nature

Effective use of vegetation in the indoor and outdoor environment of the building as a filter for air pollutants, a natural cooling system and thermal protection, as well as efficient water management with the aim of recreating part of the natural environment.

h. Lighting and colour

Healthy design promotes the use and control of natural lighting with its daily and seasonal changes. Artificial light is synchronised with these oscillations to adapt to the circadian rhythms of the human being, avoiding disturbances of the biological rhythms and promoting a continuous state of well-being. Visual variables of light (intensity, hardness and colour), visual variables of focus (amount of light, light fall-off, coverage, shadows, glare and colour) and vision factors (visual accommodation, adaptation and visual acuity) are taken into consideration. The design variables that are directly controlled in healthy architecture are the following: luminous intensity; illuminance; luminance; contrast and glare

Although, as described, the disciplinary exchange between human health and the built environment has been progressively accepted as a driver to reasonably advance the town planning agenda (Kent and Thompson, 2012) [41], nowadays, one of the direct consequences presented particularly by the COVID-19 pandemic, originating from the SARS-CoV-2 virus, is an opportunity to implement health promotion and disease prevention strategies, as well as the adoption of norms for living with a new urban order. The new norms of social behaviour imposed by health restrictions during the pandemic have led to changes in the spatial relations of coexistence, with direct impact on the urban environment (Frumkin, 2021) [42].

Now more than ever the term 'affordance', coined by the environmental perception psychologist Gibson (1979) [43], which refers to the perceived opportunities and constraints regarding a person's actions in a given environment, can be revised to also incorporate the emotional, social and socio-cultural opportunities and constraints offered by a changing environment (Heft, 2001) [44].

It would be a paradoxical way of activating public space in a private manner, a kind of oxymoron of the city. Understanding the physical city not only as a right but also as a reward, the new great challenge will be to generate aseptic spaces of functional autonomy, harmless to excessive socialisation and environmental balance, based on a re-encounter with nature (Moraci, 2020) [45], interconnected by healthy sustainable mobility, no longer binding 70% of public space to be reserved for road traffic, all of this pointed out by the configuration of the well-known superblocks, once the need for large journeys has been reduced, in the face of the complementary irruption of the digital city. Superblock is known as a new basic urban organisation unit successfully developed, among others, in the Gracia neighbourhood (Barcelona), recognised as good practice by UN-Habitat (2010). Based on a new perimeter structure in the road network, with low environmental impact, it manages to improve public space and mobility for pedestrians, the new player of the intermediate scale of the city. UN-Habitat (2020) defines the components of the Right to the City as those that the entire population can exercise [46]. Lefebvre (1967) defined it as a framework resulting from an anti-capitalist political debate, centred on the necessary contemporary urban transformation, extended to all citizens [47].

Subsequently, various authors introduced new components of social change based on theories of environmental balance. Abraham et al. (2009) classifies the various types of close landscapes that can be therapeutic for certain health and well-being conditions of people [48]. For example, urban parks can promote the social integration of citizens; or a landscape with visually stimulating elements such as water or vegetation can help reduce stress and improve an individual's emotional well-being (Bowler et al., 2010) [49]. Public spaces within the city can be conducive to the development of a more physically and socially active lifestyle, compared to areas with a shortage of open spaces (Lestan, 2014) [50].

The definition of the built environment that provides quality of life under the challenge of the new post-covid premises, (Oppio, Forestiero, Sciacchitano and Dell'Ovo, 2021), arises from a space that evolves towards maximum diversity, that absorbs events, not exclusive uses, whose project is not based on a recognisable closed form, but rather establishes a trajectory, whose construction belongs to a particular instant in its maximum expression of adaptation [51]. The post-covid space is thus presented as awaiting an open-ended process of ongoing temporal reconfiguration in everyday constructed spaces for emotional re-balancing, in which the somewhat understandable haphephobic reaction to physical group proximity is overcome, critically engaging with the so-called spaces of fear' and their role in fragmenting and eroding the civic function of urban space (Tulumello, 2015) [52].

3. Results

The third ecological model of human development presented by Hancock (1993) places health as an intersection between the community, the environment and the economy, with specific conditions to be met in each of these three domains in order to achieve a positive quality of life development [53]. This model could be reinterpreted as the degree of coincidence between social sustainability (enabling communities), environmental sustainability (embodied in the environment) and economic sustainability (available in resources) (Figure 5).

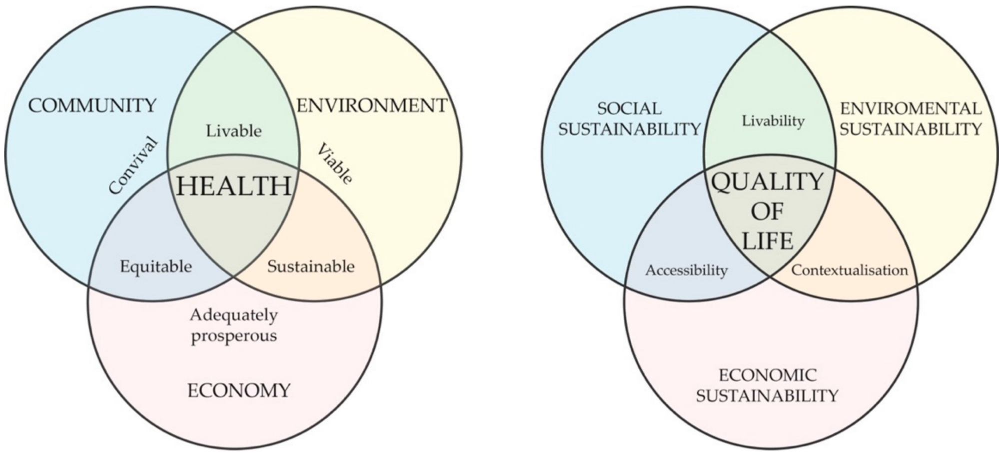


Figure 5. Comparison of the Hancock model (source: Hancock, 1993) [53] (on the left), with the proposed model (on the right) based on the definition of sustainability from the Brundtland Report (*Report of the World Commission on Environment and Development: Our Common Future*. Document A/42/427 General Assembly United Nations (UN), New York, USA 1987) [4]. Source: Created by the author.

This new model of integration between sustainability and quality of life supports the studies of authors such as Mohit (2013), who in his study on quality of life in natural and built environments states that maintaining a balance between the social, economic and environmental components of development is crucial to ensure sustainable development and to guarantee a better quality of life [54].

At the same time, societal recovery from the recent pandemic offers a number of lessons that will continue to emerge over the coming years (Capolongo et al. 2020; Milner et al. 2021; Rojas-Rueda and Morales-Zamora 2021) [55–57]. It also offers a historic opportunity (Frumkin, 2021) as follows [42]: to firmly ground the creation of new places for human needs, justice and environmental sustainability; to adopt indicators and metrics that reflect emerging priorities; to improve the efficiency and equality of urban governance; to harness technology to create places that are healthier and more resilient than ever before.

In this context, understanding that sustainability should be considered a transversal factor for urban transformation, focusing on finding the architectural design factors that influence the quality of life of the user provided by their environment, the objective is to establish a framework of study with key issues and positive indicators through a representative case, the new town city hall building of Estepona Town Hall (Malaga), from which the quality of life enhanced by a particular building can be evaluated with respect to the city (Ros-García, J.M. 2021) [58].

Estepona is a Spanish town in the province of Malaga, in the western Costa del Sol area. It is located on the southern border of the European Union, on the Mediterranean coast, just 50 km from the African coast. Both the natural, social and economic aspects, as well as its position between the Strait of Gibraltar and the dynamic city of Malaga, define Estepona as a geographical point of great strategic interest. The city enjoys a very mild Mediterranean climate, with mild winters and hot summers, with an annual average of 2850 h of sunshine. The population is growing steadily, with a current census of 71,925 inhabitants, according to the Spanish National Institute of Statistics (INE, 2021), with an average age of 41.6. Estepona's unique coastal landscape is complemented inland by the forested backdrop of the Sierra Bermeja, with an altitude of 1500 metres just 15 km from the coast, which provides an enormous variety of environments and microclimates, promoting the special biodiversity of a large number of plant and animal species.

Since 2011, the municipality of Estepona has been characterised as a major driver of urban transformation, as demonstrated by its concept of integral sustainability, in favour of improving the quality of life and actively promoting the health of its inhabitants. Its urban environment has been significantly improved over the last decade, thanks to the "Estepona, Garden of the Costa del Sol" project, financed by the European Regional Development Fund (ERDF) and the Integrated Sustainable Urban Development Strategies (EDUSI) through the creation of citizen-friendly green spaces and infrastructures as the main objective, which has transformed the city, with more than 130 naturalised pedestrian streets, as part of the process of revitalisation and economic regeneration of the historic centre of the municipality. The project addresses the five challenges (economic, environmental, climatic, demographic and social) affecting urban areas and promotes links between urban and rural environments in accordance with Article 7 of the ERDF Regulation (Regulation (EU) No 1301/2013 of 17 December 2013. Through the Sustainable Energy and Climate Action Plan (SECAP), Estepona Town Council promotes sustainable development policies and encourages local policies to adapt and fight against climate change, in compliance with the commitments acquired with the Spanish Federation of Municipalities and Provinces (FEMP) in the Spanish Network of Cities for Climate.

At the same time, the Territorial Information and Management System (SITES) has been implemented as an innovative model of e-administration for intelligent and coordinated municipal data management for the governance of all public services to citizens. As a novelty, it allows the use of the territory as an integrating element in the management of the various urban inventories for all municipal activity. In addition, the Estepona Town Council considers the Citizen Participation area of vital importance to offer a coordinated planning service for the whole city, from which the decisions and environmental or geo-referenced infrastructures of the municipality can be resolved. The Estepona Town Council joined the Network of Local Entities for the development of the 2030 Agenda in June 2020, and since that date, it has been working on the integration of the Sustainable Development Goals for municipal strategic planning.

The intention is to convert the urban area of intervention, where the construction of the new town city hall building of Estepona is located, into the focus of environmental centrality and qualitative articulation of the city. For the architectural project and subsequent execution of the construction of the new town city hall building of Estepona, different analysis and dynamic simulation models have been considered in terms of functionality, sustainability and energy efficiency, key issues and positive indicators that can be identified as determining factors for the enhancement of the perceived quality of life in the city. Its novelty also lies in the fact that it is the only new town city hall that has actually been newly built in 2022 in Spanish territory for municipalities with more than 20,000 inhabitants, which is why it is of the greatest relevance, thus reinforcing its selection as a particular case study. The location of the new town hall building is situated on a plot at the heart of Estepona town centre on Avenida Juan Carlos I, on the western border with the redeveloped old town (Figure 6).

Figure 6. *Cont.*

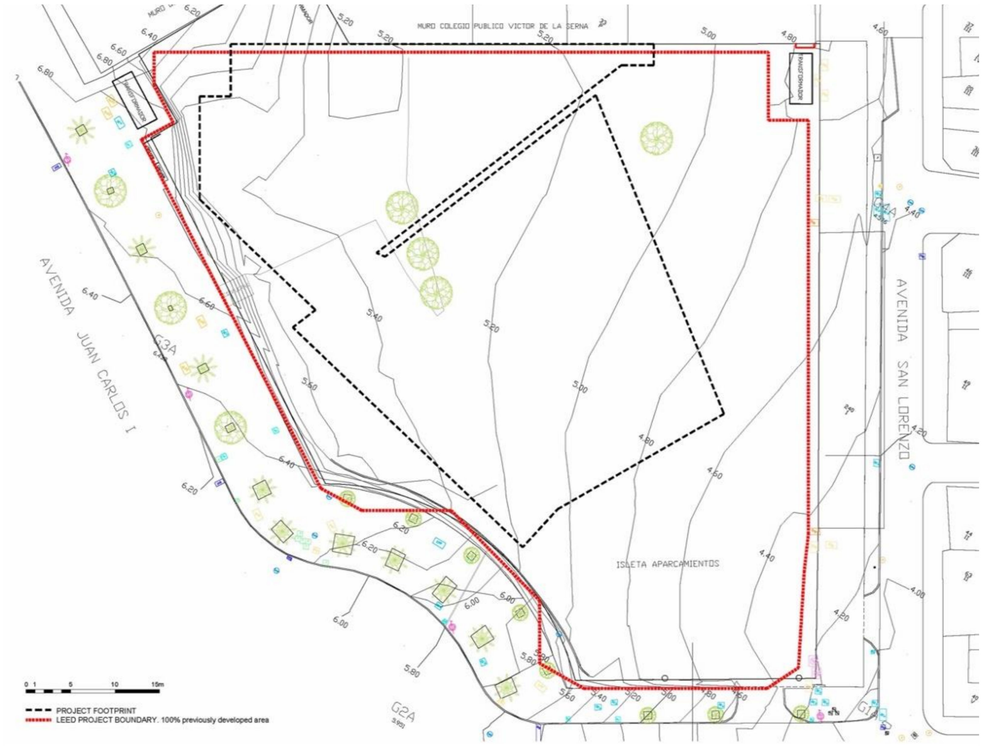


Figure 6. (**above**) Aerial view of Estepona town centre where the project is located. Combined density (m^2/hectares) = Total floor area (m^2)/Total buildable land (hectares) Combined density (m^2/hectares) = 487,463.60/32.50 = 14,998.88 m^2/hectares. (**middle**) View of the original state of the plot on which the current building is located. The boundary of the plot's urban performance represented by a red line. (**below**) Location plan with the footprint of the building in relation to the plot in black dashed line. Source: Castaño & Associates. LEED Rating System Report [59].

As it is a consolidated urban area with existing infrastructure, the distance between the services is reduced, facilitating movement and access on foot or by bicycle, encouraging daily physical activity by users, with the resulting limitation of greenhouse gas emissions, air pollution and other environmental damage associated with public health. Typologically, it is a free-standing building with a total of eight floors above ground level for administrative use and a basement floor for parking services, with a built surface area of approximately one thousand square metres per floor (9300 m^2 in total above ground level), a double-skin façade and a landscaped roof (Figure 7).

Strategically, the use of the form factor concept as a first approach to controlling the building's heat energy exchange with the outside from a bioclimatic point of view should be highlighted. Orientation and passive design strategies play an important role in the suitability of the adopted solution, significantly reducing the need for active strategies to ensure the responsible use of energy resources. In terms of construction, industrial standardisation is promoted by selecting methodologies such as DfMA (Design for Manufacture and Assembly), which refers to the set of guidelines drawn up to guarantee that a product is designed with the aim of maximising the efficiency of its manufacture, assembly and life cycle, thus minimising the impact of both the materials and construction systems and the construction processes, which grant it the corresponding quality standards "Environmental Product Declaration" (Model EPDs) issued by official certification agencies [60].

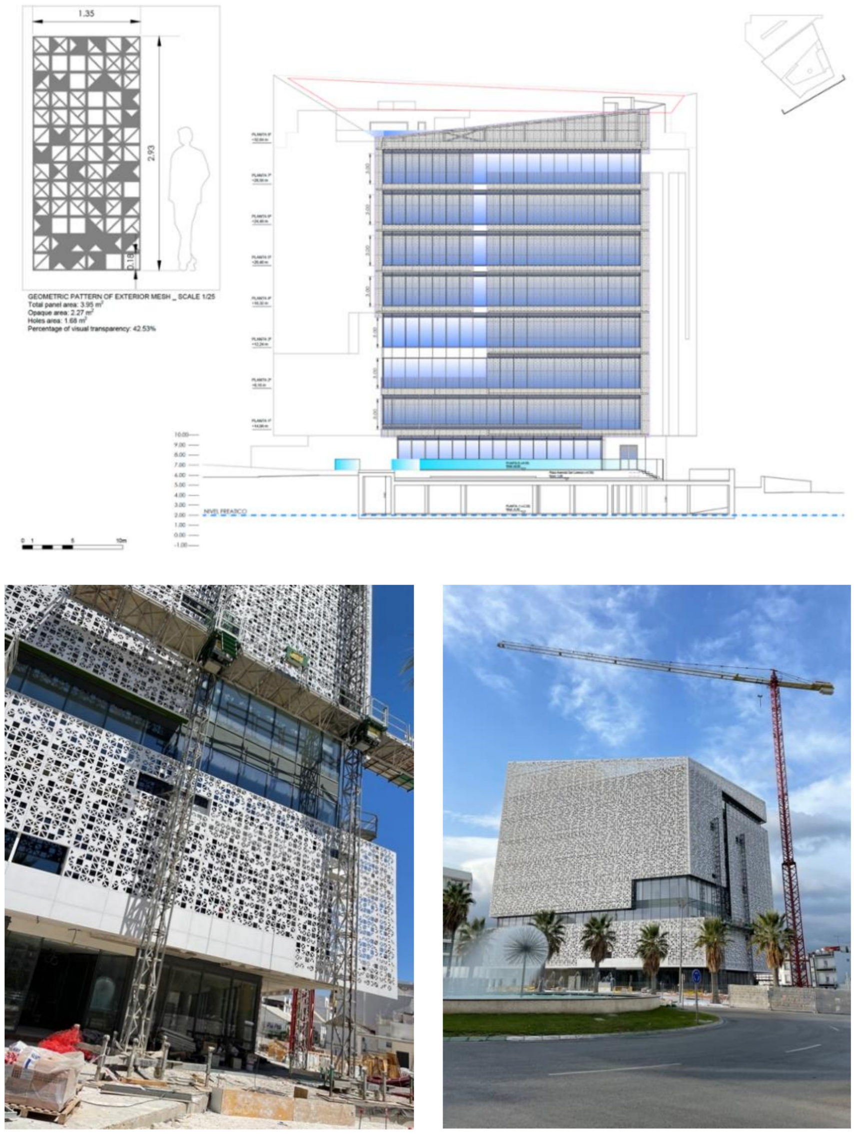


Figure 7. Double façade system with the external envelope made of lattice work. Modular geometric pattern used. South-facing elevation (**above**). Source: Castaño & Associates. LEED Rating System Report [59]. (**below**) Source: Pictures created by the author.

The concept of sustainable building, advocated by associations such as the Green Building Council (GBC), on which the most important urban transformations are based, is no longer just a necessary requirement, but a form of progress linked to quality of life. In this way, some criteria, used by the aforementioned GBC association, have been selected from the diagnostic and evaluation tool. Environmental, social and economic behaviours are analysed in a total of 15 collected impacts. Health and comfort have a weight of 9.38%, the highest percentage value of all those considered [61], for a cross-cutting approach to sustainable development that allows the quantification of improvements in the following three key areas: environmental, social and economic, by testing a real multi-level impact framework, in order to favourably evaluate the interior habitability of the town hall building of the new town council of Estepona (Malaga).

From an environmental viewpoint, in order to meet the EU's target of zero net emissions by 2050, it is necessary to improve energy efficiency in order to reduce emissions by encouraging the use of renewable energies. At the same time, within the framework of BUILD UPON [62], the European Commission stimulates citizen-focused urban energy improvement processes, creating jobs and local investment. The BUILD UPON project, funded by the EU's Horizon 2020, is led by a consortium of eight national green building country councils, with GBC Spain as coordinator. It develops strategies and solutions that enable cities across Europe to join forces with national governments and industries to decarbonise their existing building stock by 2050. Based on the Renovation Wave action plan, the aim is to ensure indoor air quality and thermal comfort in buildings. Through measurable indicators of progress for the city's renewal strategies, specific objectives such as reducing emissions, increasing employment and improving health are coordinated with each other (Figure 8).

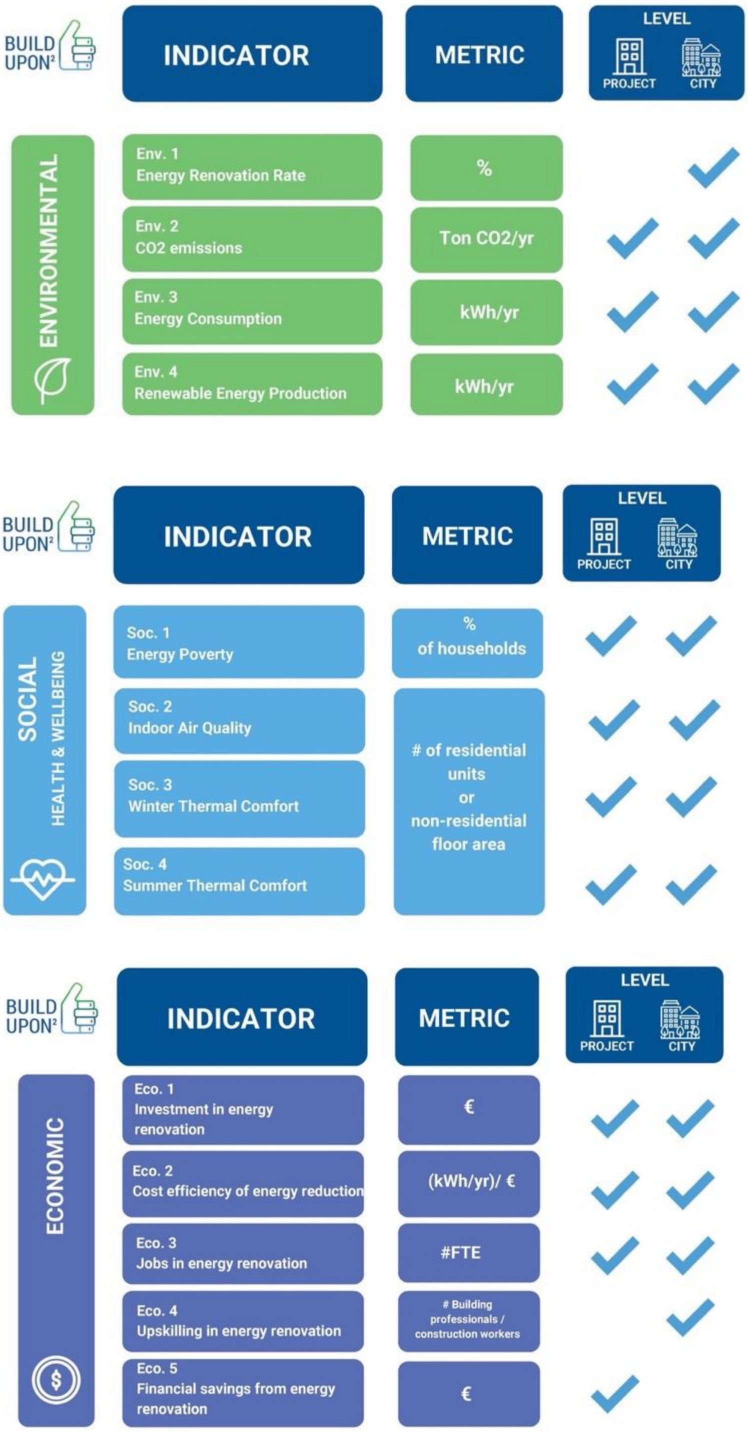


Figure 8. Methodology of core indicators proposed for the reporting and monitoring of the *Build Upon Energy Renewal Framework* [62].

Based on this methodology, variables such as thermal, acoustic and lighting comfort, air quality, and spatial functionality in its different areas are selected as defining parameters of any sustainable building for the analysis of this proposed case study.

Thus, light control is based on the entry of filtered natural light through an external latticework envelope that prevents glare and protects the indoor environment from excessive heating due to direct solar radiation through the second glass curtain wall layer. The section on lighting control in this study is a specific part of the project known as "*Integration of data in a territorial information system for the sustainable use of the lighting heritage in favour of the quality of urban life and economic development*" submitted to the 2021 call for funding of "strategic projects oriented towards the ecological transition and the digital transition" of the Ministry of Science and Innovation (Spanish Government) [63]. Its main objective is to guarantee optimum lighting conditions that promote health, quality of life and safety in the city, while respecting its natural heritage and current urban beautification, with the lowest energy consumption.

In the case of thermal comfort, priority is given to the possibility of individual control of air conditioning and heating (89% of individual spaces allow for individual control). Indoor air quality is provided by specialised ventilation systems. Mechanical ventilation has been identified as the appropriate ventilation strategy for the entire construction project. As the project is located in Estepona (southern Spain), it will meet the minimum outdoor air requirements of the following:

- Annex B of the European Committee for Standardisation (CEN) standard EN 15251-2007, Environmental input parameters for the design and assessment of the energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics;
- Standard CEN EN 13779-2007, Ventilation for non-residential buildings, Performance requirements for ventilation and room conditioning systems, excluding Section 7.3, Thermal environment; 7.6, Acoustic environment; A.16; A.17.

For this purpose, a mechanical system consisting of three outdoor air energy recovery units (from manufacturer Swegon) has been considered to cover, on demand, the required outdoor air intake flow for all occupied spaces. All three units have at least F7 air filters as a form of air cleaning, taking into account the outdoor air category (Section 6.2.3) and the indoor air quality level (IDA 2, according to national regulations). The system has no air recirculation (100% outdoor air) and an energy recovery efficiency of 85%. Indoor spaces with an occupancy density of 3.7 square metres per person not to exceed 700 ppm above outdoor air levels (set out in CEN Standard 13779-2007, Annex A), have CO2 sensors set according to ASHRAE 62.1-2010, Appendix C and a CO2 generation rate per person of 0.31 l/min for an activity level of 1.2 met (office). However, as Standard CEN 13779-2007, Annex A, is more restrictive than the previous code in terms of CO2 concentration, the set point has been set at 500 ppm, triggering an alarm when the CO2 concentration exceeds this point by more than 10%, thus complying with the requirements of the standard.

Most of the materials used comply with the requirements set out in the applicable regulatory code as follows:

- The emission of total volatile organic compounds (TVOC) is under 0.1 mg/m^2h;
- Formaldehyde emissions are less than 0.02 mg/m^2h;
- Ammonia emissions are under 0.01 mg/m^2h;
- The emissions of carcinogenic compounds (IARC) are under 0.002 mg/m^2h;
- Materials are non-odorous (dissatisfaction with odour is less than 10%).

Total air flow into the building (ground floor—7th floor) through mechanical ventilation according to project design calculations is 13,611 l/s.

Qtot = n − qp + A − qB = 857 persons − 7 l/s-pers + 6474.70 m^2 − 0.35 l/s-m^2 = 8265.15 l/s

Qtot (design) = 136,11.111 l/s

An electrical control system is fully integrated into each air ventilation unit. The microprocessor-based equipment controls and regulates temperatures, airflows and other functions.

The factors in the building's surroundings that contribute to the better external habitability of the building as a qualitative public space that contribute to greater social cohesion are also taken into account. Thus, 60% of the plot area is allocated to free spaces for public use (1895 m^2), in which unique areas of sustainable and energy-efficient urban furniture are located for resting (*Burbuhuts system*) by means of water sprays, which provide citizens with healthy wellbeing while practising physical exercise and allow the city to become more humanized. The purpose is to use the energy of human propulsion in mini-bike pedelecs as a renewable source applied to producing cumulative energy. Through the physical and sporting activity of pedalling, energy is generated, which, by means of two alternators, is fed into batteries where it is accumulated for recreational use and later used for energy in the form of outdoor conditioning by water misting and lighting (Figure 9) [64].

More than 25% of the open spaces are occupied by vegetation (507 m^2) and by innovative street furniture aimed at promoting physical activity (Figure 9).

Estepona's Town Hall is a public building, the purpose of which is to welcome and integrate the entire population, which is why it incorporates facilities accessible to everyone. It is located in a part of the city with good connections to public transport, cycling facilities and parking (Figure 10). Two bus stops are located at a distance of fewer than five hundred metres from the plot, where seven different bus lines are available. The outdoor square in which the building is located has access ramps to the various levels, providing total accessibility to the entire plot.

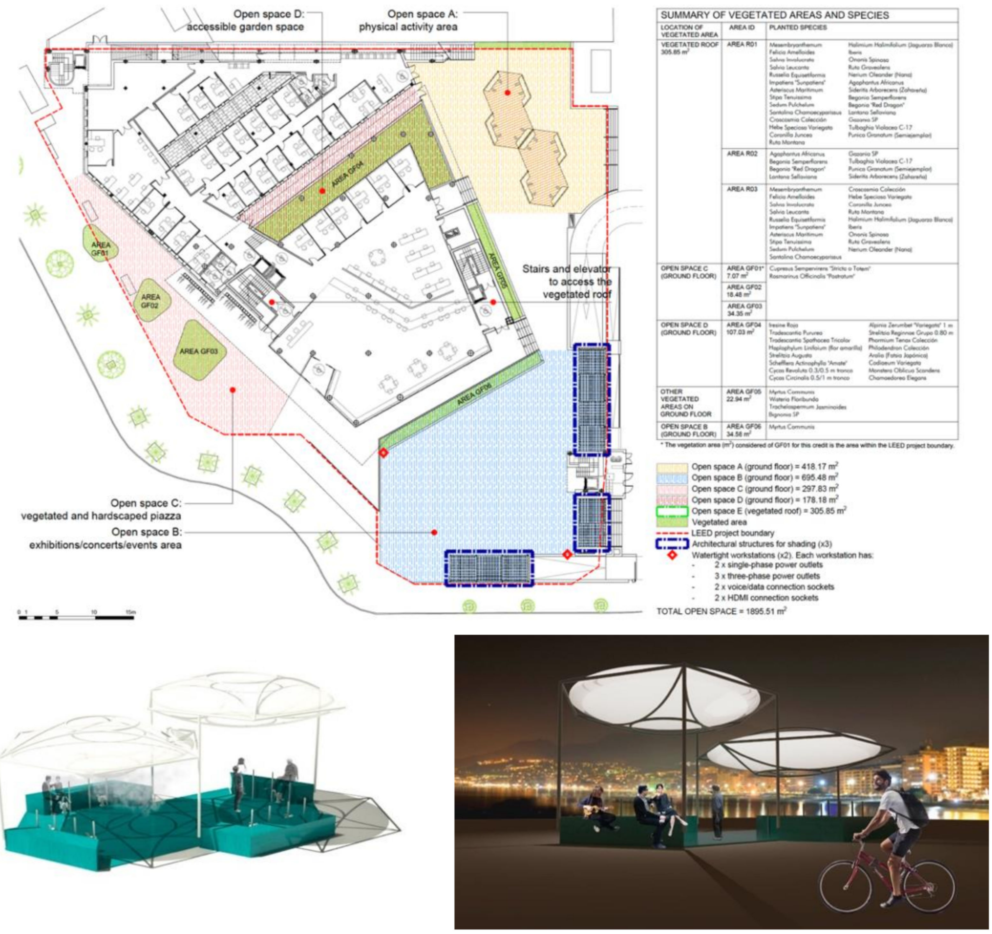


Figure 9. *Cont.*

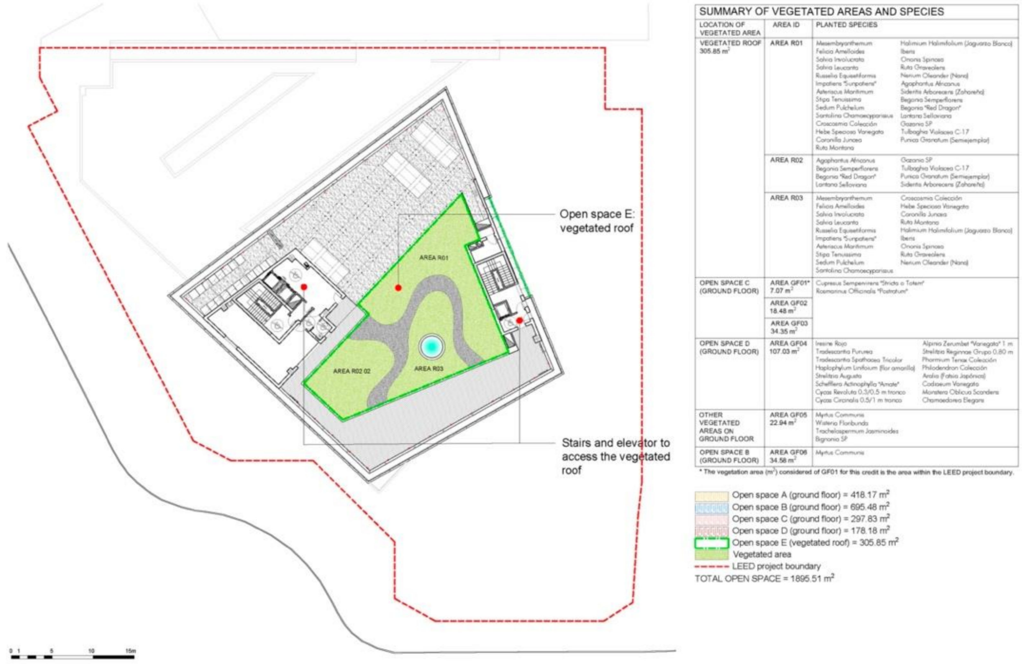


Figure 9. The urban performance boundary of the plot is shown as a red line (**above**). *Burbuhuts system* of healthy and efficient urban conditioning, in daytime water misting and night-time lighting (**intermediate**) Source: created by the author [64]. Ground floor plan in relation to the outdoor space of the plot. Roof floor with garden area (**below**). Source: Castaño & Associates. LEED Rating System Report [59].

The location of all the delegated management areas in the same building avoids unnecessary commuting, promotes connectivity and facilitates citizen participation at the highest efficiency. The interior of the building is designed to break the isolation labyrinth effect (Brusilovsky, 2015), proposing zones that are free from physical and visual architectural barriers based on interior glass partitions that create an attractive working landscape floor plan [65].

The building takes advantage of the fact that the site offers very high availability of daily solar power due to the high daytime energy demand (627,824.2 kWh/year) and so the incorporation of a photovoltaic array consisting of 163 solar panels for energy generation (Jinko Solar JKM-465N-7RL3 Tiger model) allows approximately the production of 12,518.40 kwh/month, 15% of the building's total electricity demand to be saved, 45% of the building's air conditioning consumption, making it stand out in terms of energy sustainability from renewable resources, with a total annual exportable energy produced, after deducting system losses and conversion, of 104.77 MWh, an installed power of 65.10 kWp, greenhouse gas emissions saved of 27.76 tCO2eq, equivalent to the planting of 1275 trees and an estimated renewable energy cost saving of 16.69% (simulation carried out by Solar-edge. Libener. 9 September 2021) [66].

In addition, the building provides savings in water consumption (indoor and outdoor) and rainwater collection and reuse.

Given the use of the building, i.e., it is used as offices open to the public from 8 a.m. to 3 p.m., the daytime energy demand is high. In order to obtain an energy-efficient building, a series of simulations were carried out in the design phase by means of the Design Builder computer software, using an IWEC II (International Weather for Energy Calculation) hourly weather file, developed by ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) (Figure 11). These simulations determined the corrective measures that should be carried out in order to finally obtain a 36% reduction in the building's energy demand and help optimise its performance. The aim is to reduce heat losses in winter and achieve a transmission heat increase in summer, bringing significant benefits in terms of comfort, running costs and operational CO2 emissions.

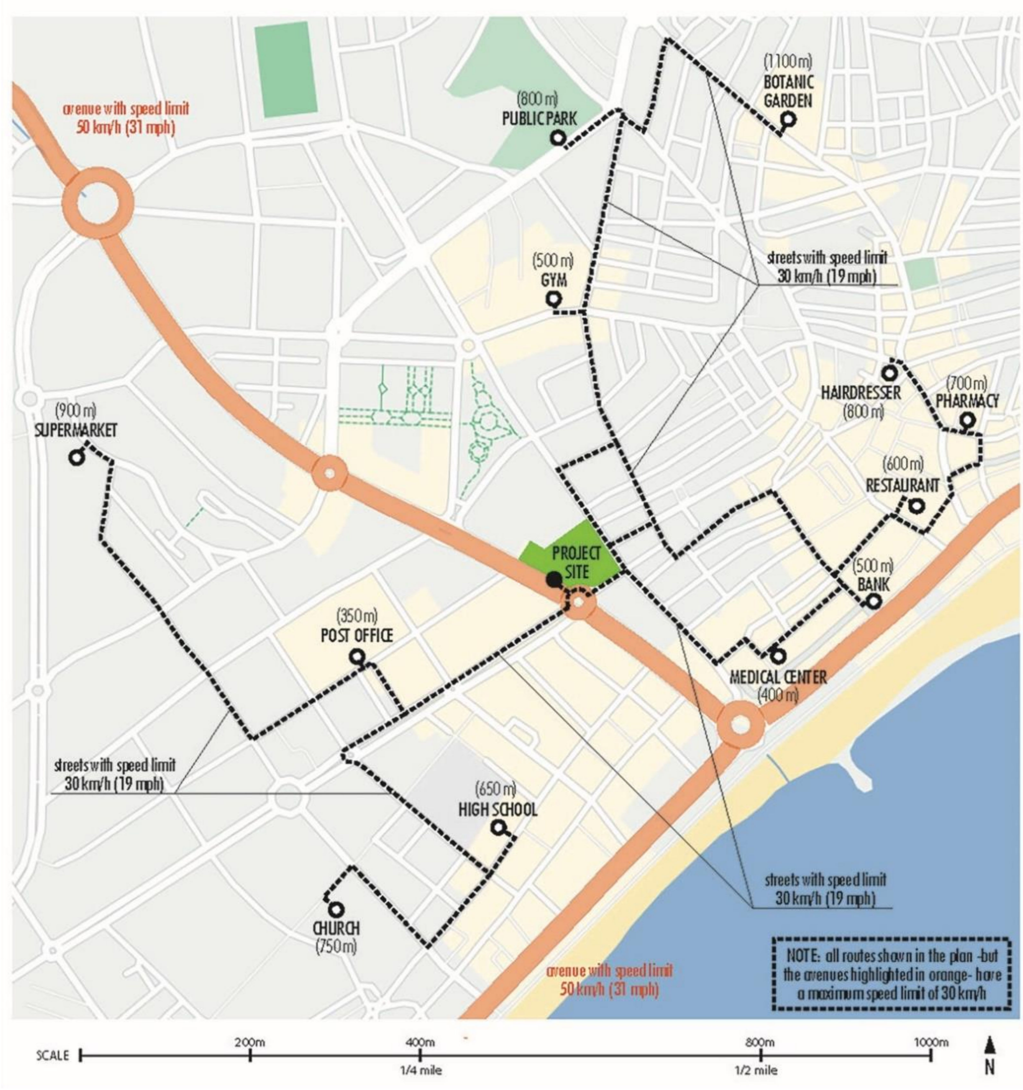
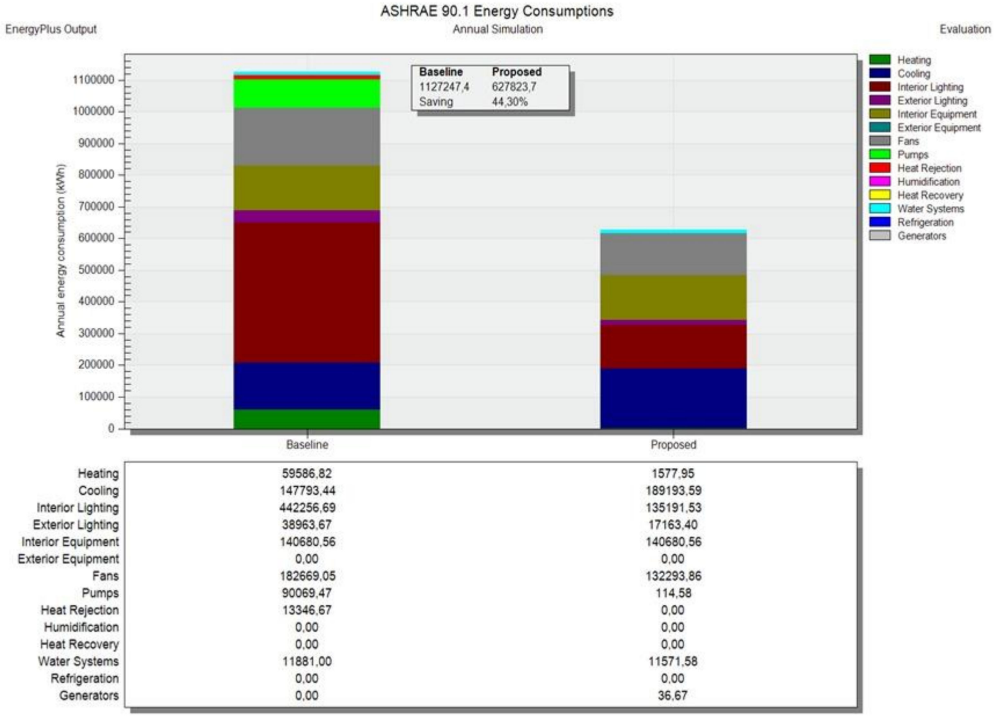


Figure 10. The project is located in such a way that all the functional entrances are within a 200-yard (180-m) walking distance or cycling distance from the bicycle network of the town. Besides, this bicycle network connects to at least 10 diverse uses. Source: Bicycle Network. Castaño & Associates. LEED Rating System Report [59].

Thus, the following measures are highlighted, depending on whether they are considered passive strategies or based on installation equipment:

- Reinforced concrete structure that improves the overall thermal mass levels of the building;
- Thermal insulation in the outer layer of the opaque façade (SATE system) that protects against sudden changes in temperature;
- A green roof improves the thermal performance of the building, acting as natural insulation;
- High-performance window frames with low-emissivity double glazing with a value of Ug = 1.0 W/m^{2}K and solar factor g = 40%;
- External façade enveloping latticework that reduces solar incidence increase and generates a perimetral thermal cushion of protection by way of shading. At the same time, it prevents glare from impacting indoors without obstructing the view to the outdoor area;

- The use of energy-efficient LED lighting, combined with dynamic control via light sensors, reduces both space cooling requirements and the total installed light output;
- *Passivhaus* certified mechanical ventilation equipment with high efficiency (over 82% and F7 and F9) and heat recovery, ensuring consistent high-quality indoor air;
- The installation of energy-efficient lifts (energy efficiency class B according to VDI 4707) saves energy and reduces heat increase in lift shafts and stairwells;
- Energy is supplied to the building by an electricity trading company providing energy from renewable sources, with guaranteed labelling and transfers of guarantees of origin from the National Commission for Markets and Competition (CNMC).



	Baseline	Proposed
Heating	59586,82	1577,95
Cooling	147793,44	189193,59
Interior Lighting	442256,69	135191,53
Exterior Lighting	38963,67	17163,40
Interior Equipment	140680,56	140680,56
Exterior Equipment	0,00	0,00
Fans	182669,05	132293,86
Pumps	90069,47	114,58
Heat Rejection	13346,67	0,00
Humidification	0,00	0,00
Heat Recovery	0,00	0,00
Water Systems	11881,00	11571,58
Refrigeration	0,00	0,00
Generators	0,00	36,67

Figure 11. Annual simulation of energy consumption. Comparison chart according to ASHRAE standard 90.1. Program Version: EnergyPlus, Version 9.4.0. Report: Annual Building Utility Performance Summary. Timestamp: 2021-12-17 Input Verification and Results Summary. Component Sizing Summary. Climatic Data Summary. Envelope Summary. Lighting Summary. Equipment Summary. HVAC Sizing Summary. System Summary. Outdoor Air Summary. Energy Meters. Standard 62.1 Summary. LEED Summary. Economics Results Summary Report. Tariff Report. Source: Castaño & Asociados. Passivhaus engineering consultancy [66].

In relation to the demand for drinking water, the building's consumption is reduced to a minimum by installing the most water-efficient toilets and taps available. After simulating the water consumption of the building, considering the hours of operation of the building (Monday to Friday, 8 a.m. to 3 p.m.) and the occupancy of the building (300 employees and 280 visitors during peak hours), an annual consumption with a percentage reduction in indoor water use of 48.86% compared to the standard commercial range was obtained (Figure 12).

In relation to the demand for outdoor water consumption, from the beginning of the design phase of the project and considering the climate and the relatively low annual rainfall in the town of Estepona, it was agreed that native plant varieties with a wide variety of shapes, sizes, colours and flowering periods be selected, with very low water demand, for the 473.42 m^2 of landscaped space distributed between the outdoor space on the ground floor and the roof garden. The design of the urban public outdoor space surrounding the building environment considers the minimisation of the *heat island effect* by avoiding the absorption of the sun's heat by radiation into the atmosphere, based on light-coloured paving with a high *solar reflectance index* (SRI = 65; SR = 0.56). This avoids an increase in regional average warming. The selection of suitable luminaires in a carefully considered location avoids the upward effect, glare and intrusion, thus reducing light source pollution, and also allows the ability to have a twilight sensor control system.

Summary for Design and Construction Rating Systems

Note: All information on this tab is READ-ONLY. To edit, see the previous tab(s).

Refresh Groups

Group Name	Baseline Case (liters/year)			Design Case (liters/year)		
	Annual Flush Volume	Annual Flow Volume	Annual Consumption	Annual Flush Volume	Annual Flow Volume	Annual Consumption
Group 1	1,388,919.40	767,981.50	2,156,900.90	622,896.12	480,067.50	1,102,963.62

Annual baseline water consumption (liters/year)	2,156,900.90
Annual design water consumption (liters/year)	1,102,963.62
Percent water use reduction (%)	**48.86%**

Figure 12. Annual simulation of water consumption. Comparative table. Source: Castaño & Asociados. Passivhaus engineering consultancy [66].

Finally, the need for the disposal of the waste generated has been identified as recyclable into different types of waste, and to be stored in the correct selective manner according to the number of occupants and spaces (Figure 13).

Figure 13. Location of waste collection points according to type of use and workstations. Upper floor of the Plenary Hall (first floor). Office type floor (Third Floor). Source: Castaño & Associates. LEED Rating System Report [59].

It is estimated that the costs for obtaining an improvement in functionality in the integrated variables for quality of life, according to the parameters indicated in the proposed methodology, represent approximately an added amount of 20% of the initial expenditure in its planning phase, with a payback period in energy consumption savings of a maximum of 5 years within a planned development of high technical efficiency. However, in terms of health compensation, we can quantify them from the outset for the users due, among other reasons, to the reduction of pollutant emissions into the environment as important mitigation measures against climate change.

4. Discussion

The direct results of the current research study conclude that, supported by the numerous scientific references and the abundant methodology applied to the reference-built work and study, they respond favourably in a coordinated way to the key dynamics explained, which interact on the condition of habitability and on the stated descriptors of urban quality of life. Urban regeneration linked to the improvement of the living environment is associated with the compliance of a set of sustainable and measurable strategic conditions, which define a positive effect on the quality of life. The study of urban regeneration associated with quality of life is a topic of international interest that is key to sustainable urban development, with a particular focus on the promotion of health.

Thus, it is possible to establish a direct association between these architectural factors, present in the design and subsequent construction phase, with their capacity to enhance the quality of urban life based on the promotion of the users' health in the context to which they belong. The evaluation of the proposed case study of the new town hall of Estepona (Malaga), which operates on the five reference factors (*Identity, Character, Image, Materiality* and *Implementation*), reflects a behaviour capable of enhancing the quality of life of the city as a whole.

The methodology defined by the analysis of the five triggers of architectural design starts from an approach of habitability recognisable in every work of built value. At the same time, the impact that urban development produces on the natural physical environment must necessarily consider the conditions that the climate establishes in the form and constructive reason of the architectural object. It is then a question of identifying a two-way path, which, acquiring its concrete meaning in local action for the quality of life towards environments conducive to the integral health of citizens, is firmly framed in a scenario of global thinking, assimilable to any joint action project committed to the three recognised areas of sustainability (social, environmental and economic) enunciated as early as 1987 by the Brundtland Report (Report of the World Commission on Environment and Development: Our Common Future. General Assembly United Nations) [4].

The application of the conclusions resulting from the project and the implementation of its operational management model may result in energising the natural capacity of areas currently undergoing urban transformation while contributing to correcting the current environmental deficit of urban developments towards an improvement in quality of life.

The proposed basic architectural parameters for healthy habitability incorporated into the design process, which provide key issues and positive indicators in terms of functionality, sustainability and energy efficiency, through the representative case study, imply an effective control over the architectural factor as a social determinant of health, and consequently, a decrease in health inequalities and an increase in quality of life (Figure 14).

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has made it possible to implement health promotion strategies with the adoption of modifications in spatial relations of coexistence aimed at knowing how to activate the public space in a private way, with direct repercussions on the urban environment in the transformation towards the conservation and improvement of the quality of urban life. The great new challenge is to generate aseptic spaces of functional autonomy, harmless to excessive socialisation and environmental balance, based on a re-encounter with nature once the need for long journeys has been reduced, in the face of the complementary irruption of the digital city.

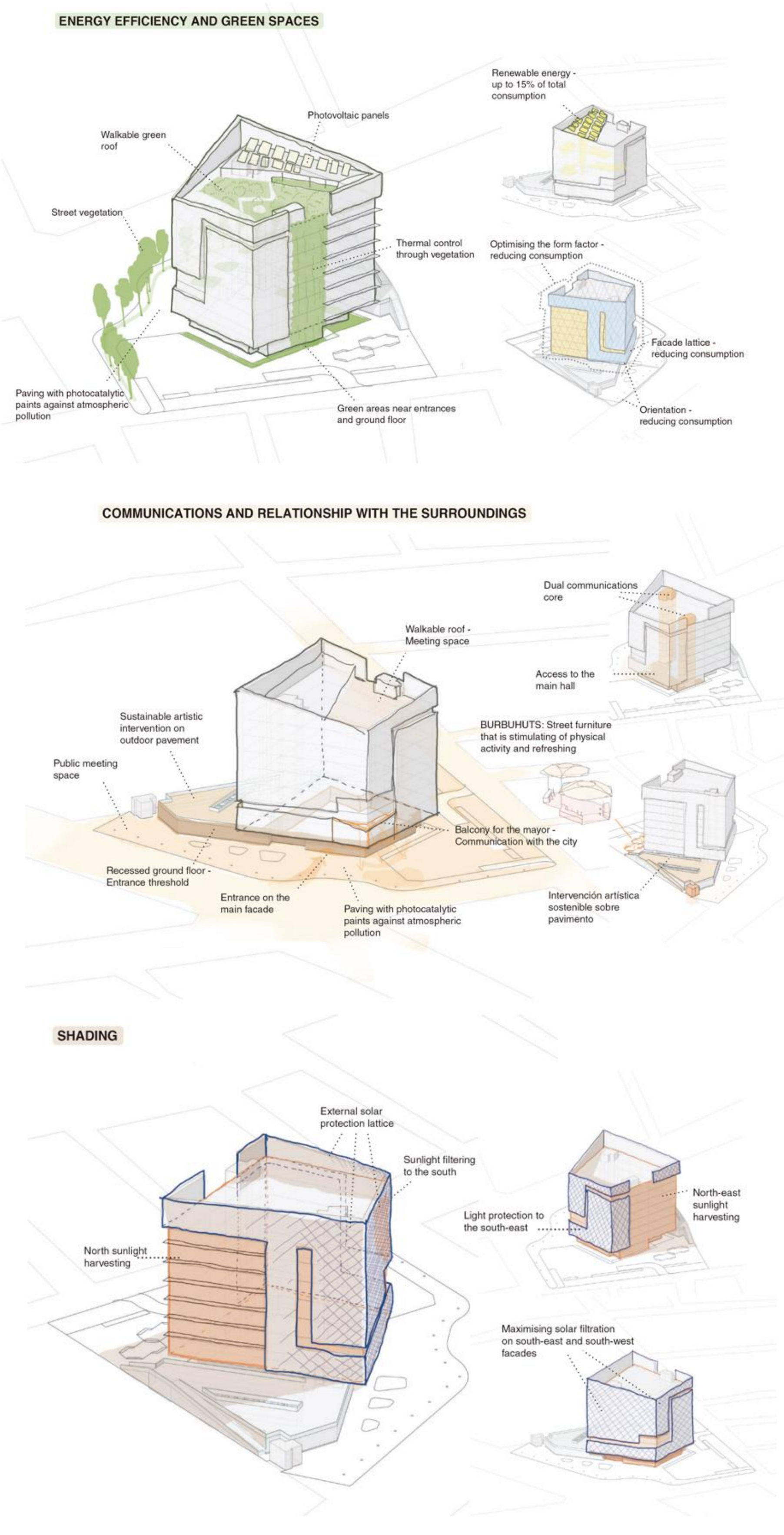


Figure 14. *Cont.*

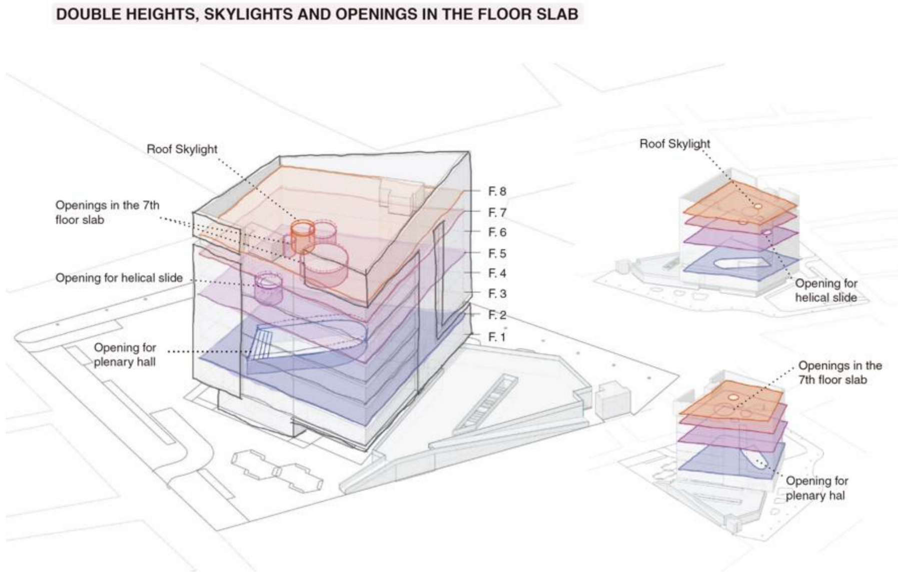


Figure 14. Volumetric diagrams of measures taken and actions relating to the following indicators: energy efficiency and green spaces; communications and relationship with the surroundings; shading; double heights, skylights and openings in the floor slab. Source: Created by the author.

The fact that the case under analysis is a public building also turns it into a coherent management model that can be extrapolated to the requirements of sustainable environmental progress in the general interest of a socially just city.

The degree of utilisation of available resources for the implementation of processes to improve the quality of life not only allows us to identify potential saving points, favouring the so-called energy transition, but also means investing in the progress of opportunities for equitable socioeconomic conditions of the population, where the relationship between the quality of life and the cost that supports it compensates for the effort required for its continuous improvement.

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