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# Urban environmental quality and human well-being Towards a conceptual framework and demarcation of concepts; a literature study

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## Abstract

Construction of a multidisciplinary conceptual framework of environmental quality and quality of life is required to advance the field of urban development, environmental quality and human well-being. Such a framework would allow for a more theory-based choice of indicators and for the development of tools to evaluate multidimensional aspects of urban environmental quality. These tools are required to assess the current and future quality of the urban environment and to have, eventually, the ability to assess the implications of spatial and urban planning policies with respect to these dimensions. Against this background, the National Institute for Public Health and the Environment in the Netherlands (RIVM) performed a major literature review [Leidelmeijer, van Kamp, 2002, in press] to identify various concepts in the literature concerning environmental quality, the relationships between these various concepts, as well as their respective theoretical bases. This paper summarises the outcomes of this survey. It reviews the main (types of) concepts of livability, environmental quality, quality of life and sustainability, and presents examples of underlying conceptual models. Different notions and concepts are compared along the dimensions of domain, indicator, scale, time-frame and context as described by [Urban Environmental Quality—a social geographical perspective, this issue]. It is concluded that a multidisciplinary conceptual framework of environmental quality and quality of life that will go beyond the disciplinary differences found in the current literature is needed if the field is to advance.

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## 1. Introduction

Typical large city problems such as segregation, neighbourhood degradation, increased road traffic, socio-economic deprivation and inequities in health, well-being and health-care accessibility, have become

central political issues in most EU countries. This is reflected in the crucial role of local environmental quality in recent strategic European and governmental policy papers with respect to housing, spatial planning and local environmental policy. At an international level this focus is apparent in numerous scientific publications, and other documents concerning liveability and urban planning. So far, science has not advanced a comprehensive framework to address these issues in an integrated manner and to enable an

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evaluation of physical, spatial and social indicators. A recent review of relevant literature (Leidelmijer et al., 2002) revealed that no generally accepted conceptual framework in relation to well-being has been developed, nor any coherent system to measure and properly evaluate aspects of, and trends in, environmental quality. The concepts of urban environmental quality and related terms such as livability, quality of life and sustainability enjoy great public popularity and form a central issue in research-programmes, policy making, and urban development—or at least they do so in terms of the appearance of these terms in the respective literatures. However, the manifestation of and context in which environmental quality is used in research and policymaking is seldom uniform.

Concepts as livability, living quality, living environment, quality of place, residential-perception and -satisfaction, the evaluation of the residential and living environment, quality of life and sustainability do overlap, and are often used as synonyms—but every so often are contrasted. The different concepts find their origin in the various research and policymaking traditions of health, safety, well-being, residential satisfaction and urban physical environment. It is not possible to give an exhaustive review of all approaches, definitions and models within this one paper, and instead the study aimed at offering a broad insight into the diversity of approaches and concepts found. The objective is to gain insight into which concepts are needed to describe urban environmental quality and human well-being within a conceptual model.

Description in this paper is narrowed to the concepts of urban environmental quality, livability, sustainability and quality of life. Examples of definitions are given merely to illustrate the broad variety of these that were encountered in the literature. Next, examples of relevant conceptual models concerning urban environmental quality from the field of human ecology, livability and sustainability research, quality of life, city planning, social indicator movement and satisfaction research, are described in more detail. The interrelations between the core concepts are placed in a framework along the dimensions of domain, geographical scale-level, indicator, time-frame and context, as described by Pacione (this issue). In this way, an endeavour is made to demarcate the topic and clarify concepts, serving as a basis for discussion of assumptions and principles underlying different approaches to the

issue of urban environmental quality and well-being. In the last part of this study the problem of urban environmental quality is viewed from a more practical—planning and decision making—perspective. Finally, a tentative research agenda in the field of urban environmental quality and well-being is proposed.

## 2. Conceptual approaches to environmental quality

The point of departure for this survey was the notion that the manifestation of concepts such as livability, quality of life and quality of the living environment is not unequivocal. This notion is not original; others have remarked that livability has become a repository, in which almost anything fits. Szalai (1980) concludes that, when we deal with a developing concept, the lack of uniformity is normal “... to attribute at first some vaguely circumscribed meaning to it that can be subsequently clarified and specified by more research and reflection”. Others argue that uniformity in concepts is not per se necessary: environmental quality is a container concept, different theories relate to different aspects of environmental quality, the concept is multi-dimensional. Still other authors claim that it is not really possible to define these multi-dimensional concepts: “It’s like describing an onion. It appears simple on the outside, but it’s deceptive, for it has many layers. If it is cut apart there are just onion-skins left and the original form has disappeared. If each layer is described separately, we lose sight of the whole. The layers are transparent so that when we look at the whole onion, we see not just the surface but also something of the interior” (Rybczynski, 1986; cited by Moore, 2000).

### 2.1. Definitions

Much of the literature gives at most only an implicit definition of concepts. On the basis of the context or the choice of indicators one has to conclude what meaning has been given to the concepts. Nevertheless a broad variety of definitions of the concepts of livability, environmental quality, quality of life and sustainability was encountered in the literature.

Below some representative definitions are presented in Table 1.

Table 1  
Examples of definitions of livability, environmental quality and sustainability

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Livability

The Dutch dictionary. Attractiveness and suitability to live in it and with it

**Pacione (1990)**: livable = humane (used as synonyms); livability is a quality that is not an attribute inherent in the environment but is behaviour-related function of the interaction between environmental characteristics and personal characteristics

**Veenhoven (1996)**: livability = habitability = quality of life in the nation: the degree to which its provisions and requirements fit with the needs and capacities of its citizens

**Hortulanus (1996, 2)**: ‘the degree to which the individual is capable of creating his or her daily living situation

**Newman (1999)**: livability is about the human requirement for social amenity, health and well-being and includes both individual and community well-being

**Duyvendak and Veldboer (2000)**: ‘tie to the district well-being and social networks

**Marsman and Leidelmeijer (2001)**: resident’s evaluation of the living environment

**RIVM (2001)**: perception of the daily living environment

Environmental quality

**Lansing and Marans (1969)**: ‘an environment of high quality conveys a sense of well-being and satisfaction to its population through characteristics that may be physical, social or symbolic’

**Porteous (1971)**: environmental quality is a complex issue involving subjective perceptions, attitudes and values which vary among groups and individuals

**RMB (1996)**: environmental quality is the resultant of the quality of composing parts of a given region but yet more than the sum of parts, it is the perception of a location as a whole. The composing parts (nature, open space, infrastructure, built environment, physical environment amenities and natural resources) each have their own characteristics and partial quality

**RIVM (2002; workshop livability 2002)**: environmental quality can be defined as an essential part of the broader concept of ‘quality of life’, the basic qualities such as health and safety in combination with aspects such as cosiness and attractiveness

Quality-of-life

**Szalai (1980)**: life quality refers to the degree of excellence or satisfactory character of life. A person’s existential state, well-being, satisfaction with life is determined on the one hand by exogenous (‘objective’) facts and factors of his life and on the other hand by the endogenous (‘subjective’) perception and assessment he has of these facts and factors, of life and of himself

**WHO-QOL Group (1993)**: an individual’s perception of his/her position in life in the context of the culture and value systems in which he/she lives and in relation to his/her goals, expectations, standards and concerns

**Diener and Suh (1997)**: life satisfaction

**Raphael et al. (1996)**: the degree to which a person enjoys the important possibilities of his/her life

**Veenhoven (1996)**: happy life expectancy = product score of life expectancy (in years) and the mean ‘happiness’

**Musschenga (1997)**: the good life is a combination of enjoyment: positive mental states (the hedonic component), satisfaction: evaluation of success in realizing a life-plan or personal conception of the good life (the cognitive-evaluative component) and excellence: the virtuousness or value of a person’s activities (arètic component)

**Cheung (1997)** ‘the good life’ is a combination of:

the hedonist good life (life satisfaction, pos./neg. affect; depression)

the dialectical good life (mutual interpersonal concern, understanding of others)

the humanist good life (the realisation of human potential, self actualising value, autonomy)

the formalist good life (according to what is right: conformity with moral conventions, religious commitment)

**RIVM (2000)**: quality of life is the factual material and immaterial equipment of life and its perception characterised by health, living environment and legal and equity, work, family, etc.

Sustainability

**WCED (1987)** “sustainable development is development that meets the needs of current generations without compromising the ability of future generations to meet their needs and aspirations”

**United Nations (1987)**, cited by **Newman (1999)**: “a global process of development that minimises environmental resources and reduces the impact on environmental sinks using processes that simultaneously improve economy and the quality of life”

**IUCN (1980)**: “development that improves the quality of human life while living within the carrying capacity of supporting ecosystems”

**Camagni et al. (1997)**: “sustainability refers to a dynamic, balanced and adaptive evolutionary process, i.e. a process in which a balanced use and management of the natural environmental basis of economic development is ensured”

**Newman (1999)**: “the goal of sustainability in a city is the reduction of the city’s use of natural resources and production of wastes while simultaneously improving its livability, so that it can better fit within the capacities of the local, regional and global ecosystems”

**Flores et al. (2000)**: “long term livability”

**Shafer et al. (2000)**: “a community’s ability to develop and/or maintain a high quality of life in the present in a way that provides for the same in the future”

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Definitions in itself are not that interesting, but their implications in terms of underlying theories and hypotheses are extremely important for the discussion about relevant domains, indicators, scale levels and causality.

## 2.2. Conceptual models

In the discussion of a selection of prevailing theoretical approaches a distinction is made between theoretical and empirical approaches. Theoretical models represent hypothetical relations between concepts. Empirical models represent factual relations between the different concepts. Ideally both go hand in hand: from a theoretical framework a conceptual (measurement) model is formulated and empirically tested. In practice some conceptual models are of such a high level of abstraction that testing is not possible. In that case we speak of ‘thinking models’. At the other extreme are models that are empirically explorative; more or less coincidental elements are combined into a framework. In the best case these models can function as a point of departure for theory building and thus have heuristics value. A review is given of these different approaches without pretending to be exhaustive. The sequence of presentation is more or less arbitrary, but generally moves from abstract and broad towards narrow (concrete) and specific.

The colourful diversity of models that was encountered in the literature demonstrates that there are many ways to conceptualise themes related to livability, environmental quality, quality of life, sustainability and ‘kin’ concepts. As a consequence very little consensus exists about which conceptual framework should be employed. Against that background we can not automatically assume that authors who use the same term, actually give this term the same meaning. This was already seen in the definitions, but also in the conceptual approaches: extremely large differences can be discerned in the (implicit) meaning that is given to concepts. There seems to be a lack of consensus on the following fundamental questions:

- How are the meta-concepts ‘livability’, ‘quality of life’, ‘quality of place’ and ‘sustainability’ related to each other?
- Which domains and aspects of these domains are relevant to livability, quality of life, quality of place and sustainability?

Essential differences between models were also found in:

- Scale-level (individual versus aggregate).
- The manner in which the person-environment relation is approached (human ecology, independent entities, transactional approaches).
- Referral to objective attributes and subjective perceptions.
- Determinants or indicators (causality).
- Constant or variable (in place, time, person and culture).

Lastly differences are found in:

- The relative importance given to different environmental exposures in determining the environmental quality.
- Methods to measure the effects of combined exposures on environmental quality.
- The significance given to threshold-values in exposures (air-, noise-, external safety) in relation to environmental quality.
- The capacity for counterbalancing environmental exposures: for example financial compensation for exposure to high levels of noise.

## 2.3. Human ecology

The description of models starts with a holistic framework of human ecology (Lawrence, 2001), a model in which anthropological, biological, epidemiological, psychological and sociological perspectives can be combined. The approach combines objective and subjective approaches: individual actors, social groups and institutions are attributed a crucial role. This is an open model, meaning that human ecosystems relate to other ecosystems. The ecological approach consists of different subsystems, such as the ecological and economic subsystem.

In similar vein Camagni et al. (1997) developed a model with a broad approach to sustainability in which the interaction between the physical, social and economical aspects is described. There appears to be consensus in the literature that the physical, economic and social domains form the materials of society. These elements are systematically being used when authors try to give content to the concepts of livability and sustainability. The same three domains have been used

to conceptualise quality of life. An example is the model described by [Shafer et al. \(2000\)](#). Added value of this model is that the interaction between the domains is explicitly defined, which gives a picture of how the concepts of livability, quality of life and sustainability relate to each other.

In this approach livability is considered to be the resultant of the interaction between the physical and social domain, sustainability as the resultant of the interaction between the physical and economic domain. The interaction among these three domains is alternately defined as sustainability and quality of life.

A third approach within the ecological trend which explicitly relates livability to social, economic and physical aspects is a model of [Newman \(1999\)](#), the so called ‘extended metabolism model of human settlements’. In line with Camagni sustainability in this approach is not only related to the balance between environment and economics, but also to livability. For the first time, health is explicitly mentioned as an indicator of livability.

#### 2.4. *Quality of life*

The concept quality of life is strongly rooted in the thinking about health. There is no uniform view on causes and effect. In the model of Newman health is considered as an indicator of livability, while in other models the environmental quality is treated as determinant of health.

A good example of an approach in which health is defined as a resultant of genetic factors, the nature and quality of health care, behaviour/lifestyle and the quality of the physical and social-cultural environment is the model of [Blum \(1974\)](#).

In a schematic model formulated by [RIVM \(2000\)](#) health and livability are paralleled as two separate dimensions of quality of life, and treated as aspects of a dynamic (transactional) process.

The model examines a combination of measurable spatial, physical and social aspects of the environment and the perception of these. This perception is not only related to the objective characteristics of the environment but also personal and contextual aspects. The model is a “thinking model” and does not make explicit how the different elements are related; it presents layers of concepts that are related to each other. As

[Mitchell et al. \(2001\)](#) concludes: “there is no agreement yet on quality of life, in terminology nor in construction methods or the criteria that comprise quality of life”. In spite of this [Mitchell et al. \(2001\)](#) did try to use its different components.

In his approach quality of life consists of health, physical environment, natural resources, personal development and security. It is notable that the domain of economy is lacking, while others view this as one of the three major pillars of quality. The last model that is presented within the context of quality of life is the model of [Cheung \(1997\)](#) dealing with aspects of ‘the good life’. It is based on four ethical theories: hedonism, dialectical perspective, humanism and formalism. It is fully independent of the physical environment and can be considered as an elaboration of the interplay of perceptions that lead to a sense of good life.

#### 2.5. *City planning approaches*

Urban planners usually have very outspoken visions on environmental qualities that contribute to livability (e.g. [Corbusier, 1935](#); [Howard, 1898](#); [Jacobs, 1961](#); [Dantzig and Saaty, 1973](#)). Usually these visions are strongly conceptual, vary strongly in time (for an historic overview see [Leidelmijer et al., 2002](#)), and can seldom be evaluated in practice due to the necessary compromises urban planners are confronted with. Evaluation beforehand is also very difficult since the ‘consumers’ would need strong imaginative powers to give their opinion and generally are not enthusiastic about innovative ideas. This implies that from the urban planning field a set of visions (described or visualised) rather than empirically supported theories are available. These urban planning visions were extensively reviewed by [Smith et al. \(1997\)](#) resulting in a summary of quality and need principles that an urban environment should fulfil. Important elements are livability, character, connection, mobility, personal freedom and diversity. On the basis of this, an extensive list of physical form criteria was put together with respect to community quality. Examples of strong elements are open space areas, outdoor amenities and ‘walkability’ while the use of warm colours or the size of front lawns are given as examples of form criteria that have a weak relationship with community quality.

## 2.6. Social indicators

Within the social indicator movement a great number of often implicit conceptual models of quality exist. The domain of economics has a core place in these models. This is noteworthy since the movement originated from the idea that a one-sided attention for economic welfare is too limited. Health is one of the more prominent indicators within this approach. Most approaches work with the principle ‘the more the better’. An exception is the approach of Cicerchia (1999) who combines ‘city effects’ (positive effects of a concentration of people) with the so called ‘overload indicators’ (negative effects), e.g. the proportion of people employed in the tertiary sector versus the amount of waste produced in comparison to national data or the GDP per capita compared with national average versus the degree of air pollution.

In the social indicator movement the aim is to enable a comparison between regions, states and countries. As a result most approaches within this tradition are data-driven, or represent a compromise between models and a choice of available data.

## 2.7. Satisfaction research

In the context of satisfaction research livability is made operational in life- or residential satisfaction. The most general example in this tradition is the model of Campbell’s model (1976), in which life satisfaction is viewed as the sum of satisfactions with different environmental domains.

This satisfaction results from a process of appraisal, perception, evaluation and coping (adaptive) behaviour. In the past decade this has been a prevailing model, the essence being its hierarchical structure and a specific distinction between objective and subjective characteristics.

An example of a model based on this approach is the residential satisfaction model of Marans and Couper (2000), in which a distinction is made between different scale levels: house, neighbourhood, city and community. A strong influence is attributed to personality traits.

The model of van Poll (1997) and van Poll and van Kamp (2001) makes the hierarchic organisation of the development of residential satisfaction explicit. A central place is given to disruptive environmental

characteristics. His research has shown that this hierarchic organisation of environmental attributes is an adequate way modelling environmental quality. RIGO Research and Consultancy (2001) formulate another model that fits the Campbell tradition. The authors postulate that the perception of environmental quality is more influenced by judgements about the environment than by the objective characteristics (while taking personal and social aspects into account). An example of such an approach is the empirical model of Gonzalez et al. (1997) that modelled the satisfaction of employees with their working environment.

## 2.8. Transactional focus

Although it is generally accepted that the person environment relationship is a dynamic process (Pacione, 1990), relatively little is done with this notion, either in theory or practice, because a transactional process is difficult to analyse in a cross-sectional study. One example of a transactional approach is the often cited model of Aitken and Bjorklund (1988).

The focus of attention is a change in the total system (person environment) rather than the individual components. The model of Amérigo and Aragonés (1997) is a transactional approach to residential satisfaction. A distinction is made between personal characteristics and objective attributes. In combination, this results in residential satisfaction, which in its turn influences behaviour and results in changes of objective attributes, etc. An example of an empirical model is that of Bonaiuto et al. (1999), who describes a structural model aimed at explaining neighbourhood attachment. In this study the presence of green areas and building aesthetic pleasantness are shown to be the most important predictors of neighbourhood attachment.

## 3. Central themes and empirical evidence

The review of models and definitions shows that within the fields of environmental quality, quality of life and sustainability a broad variety of models and definitions is used and that the discussion about their applicability is well under way. The general key issues (conceptual and methodological) as distinguished by Pacione (this issue), were used to compare the core concepts. The concepts of livability, quality

of place and sustainability overlap: they all refer to (aspects of) the person–environment relationship. Environment is hereby broadly defined (physical, built, social, economic and cultural). However, some concepts are primarily related to the environment, while others are primarily related to the person. While livability and quality of place are related to the environment (object), from the perspective of a person, quality of life is primarily related to the person. The environmental perspective is only one way to look at quality. The object of sustainability is the future (the person–environment fit in the future), while livability and quality of life are focussed on the ‘here and now’.

The central theme in the different approaches is the interaction between environmental conditions and human responses. Differences are primarily related to differences in object, perspective and time-frame. Themes discussed are: domains, geographical scale level, indicator type, time-frame and context dependency.

### 3.1. Domains

Differences in the choice of domains is related to the discipline (perspective) from which the subject is approached. For reviews in relation to migration and planning, see [Michalos \(1996\)](#), [Dissart and Deller \(2000\)](#). In principle, all attributes of the environment and all characteristics of people are relevant domains in the person–environment relationship ([Mitchell et al., 2001](#)). Of importance is that the total domain is not too strictly defined. In [Figs. 1–5](#), an overview is given of all domains that were encountered in the literature.

### 3.2. Geographical scale

In the literature livability and quality of life are used at different scale-levels ranging from an individual to a global level. The levels can be defined in geographical terms (street, neighbourhood, city, state, country, etc.), but also in terms of segments, based on age, educational level, SES, etc. The same holds for livability, but the scale-level is often restricted to a low aggregation level (e.g. areas based on postal codes). Moreover, the judgement about the environmental quality is always restricted to a geographical area. Subjective

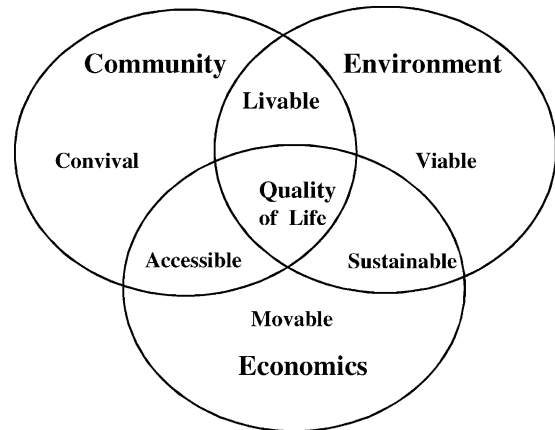


Fig. 1. A conceptual model of factors that contribute to community quality of life from a human ecological perspective ([Shafer et al., 2000](#)).

living area, however, differs between people, and depends on aspects such as life-style and mobility. The concept of sustainability implies a relation between different scale-levels: individual behaviour has an influence at both a local level, and a global level, but decisions are made on basis of the “here and now” effects rather than long-term effects or effects on a global scale ([Vlek, 2000](#)). Numerous authors plea for an integration of the concepts of livability and sustainability ([Newman, 1999](#); [Shafer et al., 2000](#); [Freitas, 1997](#); [Mulder, 1998](#); [Camagni et al., 1997](#)).

### 3.3. Indicator type

There is general consensus in the literature that objective as well as subjective indicators are necessary in the study of the person–environment relationship ([Cummins, 2000](#)). Some conclusions go beyond this notion ([Marans and Couper, 2000](#); [van Poll and van Kamp, 2001](#)): the objective conditions do not convey the true quality: thinking about quality is not determined by the objective environment but the perception people have of this environment.

In the choice of indicators, research goals play an important role ([Cicerchia, 1996](#)): if the aim is primarily scientific other indicators will be chosen than if the aim is primarily policy-oriented. In general a combination of objective and subjective indicators is considered as preferable.

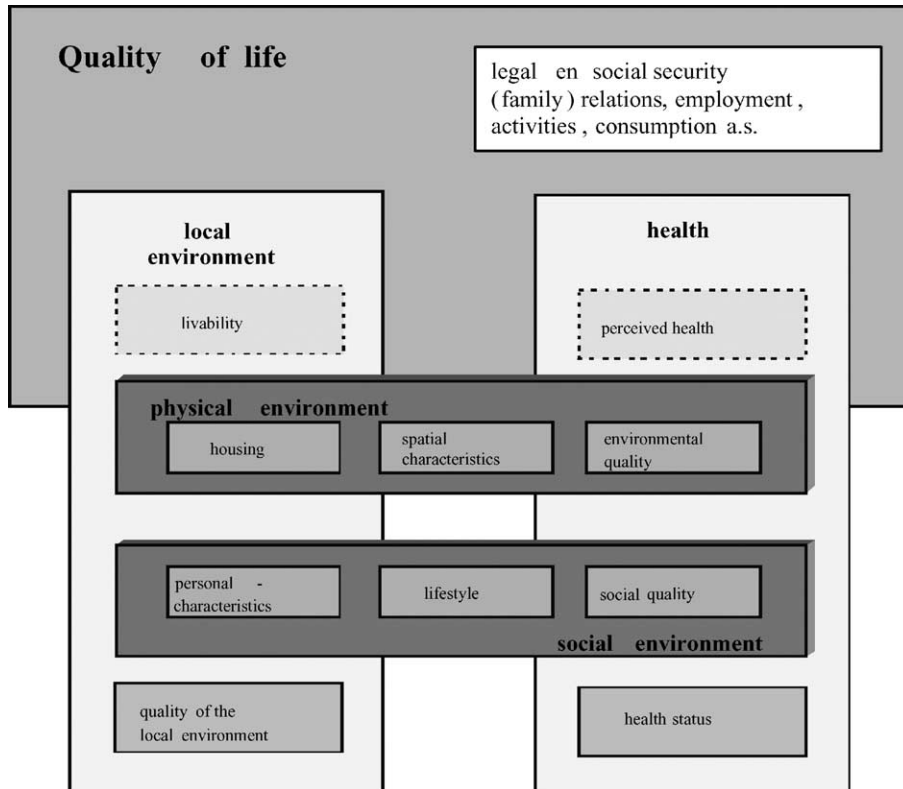


Fig. 2. Scheme of the basic elements of quality-of-life, health and the daily living environment (RIVM, 2000).

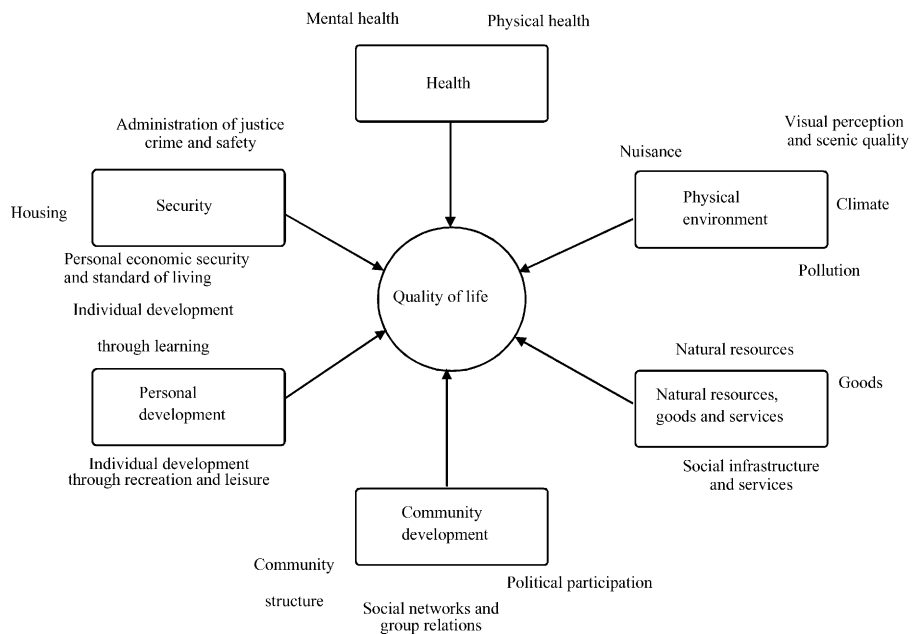


Fig. 3. Quality-of-life components (Mitchell, 2000).



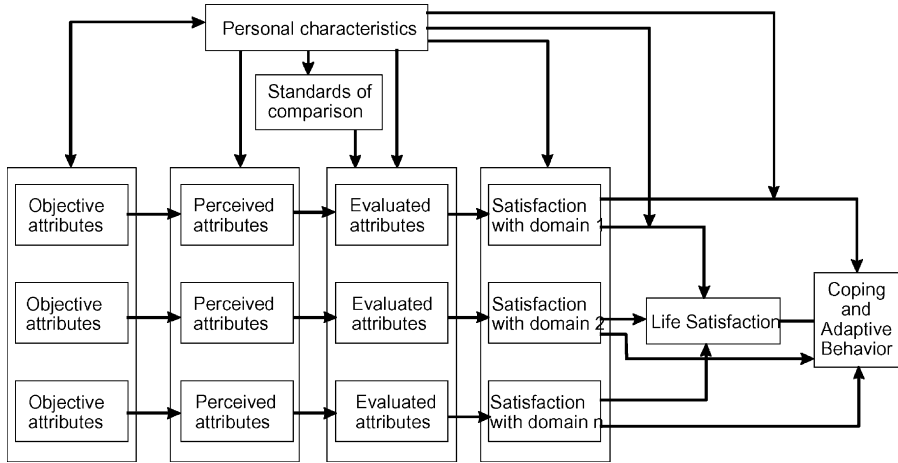


Fig. 4. Model showing relationships between domain satisfactions and life satisfaction (QOL), (Campbell, Converse and Rogers, 1976, cited in Marans and Couper, 2000).

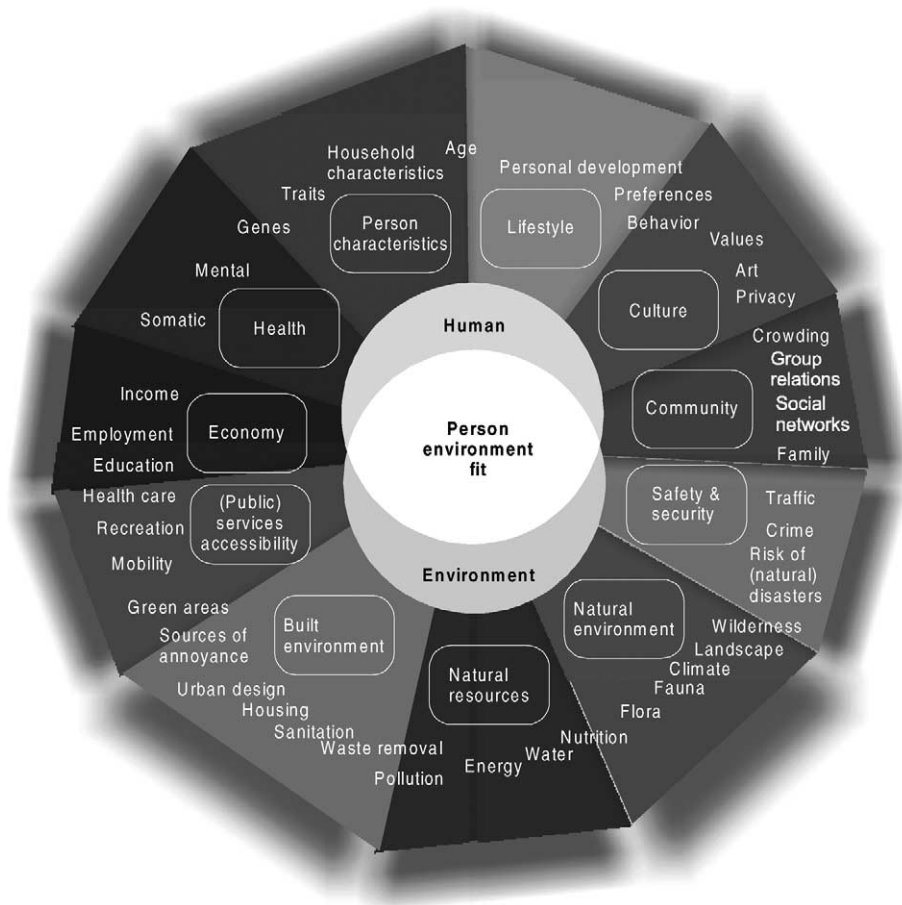


Fig. 5. Domains of (human) livability and (environmental) quality-of-life.

Subjective indicators allow us to gain insight into the well-being/satisfaction of a person, and insight into what people consider important. They contribute to the commitment of people to their environment, and to the creation of public support. Objective indicators are necessary for aspects of the environment that are hard to evaluate, they form the point of departure for environmental policy and enable the validation of subjective measures.

### 3.4. Time-frame

Another theme that is encountered in the literature on environmental quality and quality of life is the issue of causality. Both environmental quality and quality of life refer to the person, the environment and the relationship between both. This relationship is not a static one but a transactional process which makes it harder to define causality; which comes first? Events (disruptions/changes in the environment) as well as behaviour can influence the environment.

Three approaches are discerned: (1) the economical approach, (2) the (normative) sociological approach, and (3) the psychological (subjective) approach. Each of these deals differentially with the aspect of causality. In the economic approach the issue of causality is often avoided; usually one limits the analysis to a set of indicators of 'the good life', the good environment. Alternately democracy, economical independence, strength of a region and the human ecology approach are used and tested in comparing countries in terms of physical quality of life. On the basis of these studies it is generally concluded that economic welfare precedes developments related to well-being.

Another approach within this domain is described by Veenhoven (1995, 1996, 1999), who combines health indicators and happiness indicators into the Happy Life Expectancy (HLE) index. A strong association was found with GNP, degree of freedom and equity. Less influential are aspects such as social security, unemployment, religion and population pressure.

In the psychological approach, environmental quality and quality of life are made operational in the perception people have about their residential environment (stated preference) or in their behaviour (revealed preference).

The causal relation between objective environmental characteristics and the perception of these is a

problematic one. This is due to the fact that characteristics such as house ownership, life-phase, SES, income, etc. tend to cluster. However, at a more concrete level, some studies report meaningful relationship between, e.g. crowding and behaviour, housing quality and functioning of children, the amount of green in the neighbourhood and coping behaviour (Evans et al., 2001; Moser and Corroyer, 2001; Kuo, 2001).

### 3.5. Context dependency

Quality is per definition context dependent, be it social or cultural, and (the perception of) quality varies in time (see Lawrence, 1996; Mitchell, 2000; Kahneman et al., 1999; RIVM workshop 2001). Three theories are mentioned as relevant in this respect: the comparison theory, the livability theory and the folklore approach. Satisfaction or the perception of quality is assumed to be a product of a comparison of situations (e.g. after a change in circumstances), a comparison between the actual and the desired situation and a comparison with the situation of others. The comparison approach is often contrasted with the livability theory, which assumes that perceived quality is dependent on objective qualities. The folklore approach assumes that satisfaction is a product of attitude ('national character') rather than of the actual characteristics. In support of the livability theory Veenhoven showed that differences in happiness can be predicted by differences in the factual situation. Hagerty's study (1999a,b) also led to the conclusion that the level of economic welfare is related to a higher life satisfaction. A comparison with past circumstances also proved to be of influence. The comparison with the situation of others is less predictive. Empirical evidence shows that this holds especially for situations where there are real differences. Once certain needs are fulfilled, differences in circumstances no longer have the same strong discriminatory power.

The discussion of causality can be avoided by using a more pragmatic approach such as those formulated by WHO (1984); Marans and Couper (2000), or Grayson and Young (1994), who strongly recommend livability studies in the here and now: what is an issue at a given moment at a given place, how much importance are these issues given by the different stake-holders and how do they relate to historic and current objective data and what policy/measures can positively influence these opinions. The interaction

between experts and citizens is seen as an important ingredient.

#### 4. Towards a research agenda

On the basis of this literature study, it is clear that it is not possible to formulate one unequivocal conceptual framework. This is mostly due to the fact that a broad range of disciplines has approached environmental quality and quality of life, each using their own languages, very often with subtle and sometimes massive differences. However, the construction of a uniform, multidisciplinary conceptual framework is extremely important in the accumulation of knowledge. Ideally this would enable a situation in which insights from different disciplines could be a source of mutual inspiration. Even more important is that policymakers and researchers clearly describe what they are talking about. Consensus about the core concepts and the basic assumptions behind them is a (first) prerequisite for forming a multidisciplinary (uniform) framework.

##### 4.1. *Why do we need research into environmental quality and well-being?*

Questions about environmental quality are only partly academic; it is a field that derives its value from questions that are going on inside society/community (practice), meaning policymakers, architects, urban planners, environmental planners (Brown, 2000; Brown, *this issue*). The expected impacts of or the contributions to quality of life of a given projects increasingly play a role in the social acceptance of decisions, plans and planning (André and Bietondo, 2002). One of the important questions in the choices of planners is: what is environmental quality? But perhaps even more important: what is the effect of my (planning and designing) measures/interventions on the environmental quality and well-being?

And more concretely:

- Which factors determine environmental quality?
- How big is the effect?
- Are the factors of equal importance to everyone?
- Is there a basic quality that you should never trespass?

- Is compensation between qualities possible?
- Is there a tool by which we can map, evaluate (and/or predict) effects?

And when city-planners and policy makers do not see it clearly anymore they might also ask: why are environmental quality and human well being important? This question deals with societal benefit/usefulness and can not be fully answered by science, but within the context of applied research we can recommend that it is very important to gain insight in those aspects of the environment that influence health and well-being in a positive and negative sense. Initiatives in this area are International projects such as Healthy Cities that was started in the late eighties by WHO (1988, 1984, 1997), and the Sustainable Cities Programme of UN-HABITAT/UNEP. For a list of relevant outputs to social scientists and policy makers we can refer to Pacione (*this issue*).

##### 4.2. *Research directions*

On the basis of this literature survey and actual questions in the field of livability, the following research directions (partly overlapping, partly complementary) appear to have added value.

1. Cross-cultural comparison of determinants of quality of life, giving substance to the dimensions of needs and desires: which aspects of the environment are important for everyone (basic needs, basic quality) and which are strongly dependent of time, place and culture?
2. Research that deals with moderating variables at a personal, household and life-style level.
3. Systematic review of research into the association between environmental qualities and perceptions, evaluations and behaviour.
4. Research into the way in which environmental and personal characteristics contribute to the perception of the living environment. Aspects of importance in this context are: dose–response relations, additivity, accumulation, thresholds and compensation.
5. Longitudinal studies into the transactional process of environmental quality.
6. The development of a toolbox that is applicable in the (environmental) planning process and decision making.

These ambitions are, among others, formulated in an Expression of Interest (EOI, 2002) to the European Commission by the National Institute for Public Health and the Environment, Tilburg University and the University of Groningen (Netherlands) in close collaboration with 24 international research centres, that were also involved in the International Workshop.

The proposal concerns an Integrated Project on Urban development, Environmental Quality and Human Well-being and has the following objectives:

- (1) To gain knowledge on environmental quality (physical, social, spatial) and subsequent effects on health and well-being across European large cities.
- (2) To develop an integrated transdisciplinary and intersectorial approach and a digital toolkit to properly assess, monitor and potentially forecast developments of environmental quality and well-being.
- (3) To make a toolkit available, tested on its applicability to real life policy and decision-making activities/planning.

To support policy-making on the quality of urban environments, this IP intends to provide knowledge-based, digital tools for assessment, monitoring, and forecasting in the context of sustainable development, social cohesion and quality of life. To achieve this, a conceptual framework, a set of indicators concerning aspects of environmental quality in relation to health and well-being will be developed and/or synchronised and comparative data-bases will be collected in multi-centre studies across Europe by multidisciplinary teams. Societal stakeholders by necessity will be involved to safeguard the relevance to the public, planners and policy-makers and the applicability of tools in planning- and decision making activities at different scale levels.

## 5. Conclusions

The review reveals that neither a generally accepted framework, nor a coherent system to evaluate aspects of and trends in environmental quality in relation to well-being, has been developed. A broad variety of notions and models concerning environmental quality and quality of life has been

encountered in the literature, ranging from highly theoretical to empirical-explorative and rooted in different disciplines. Divides between these notions are related to differences in domains, scale-level, indicators, context and time-frame. The construction of a multidisciplinary conceptual framework that goes beyond these disciplinary differences is deemed necessary to further the field. Such a model is potentially of interest to a diverse range of professional areas such as planning, architecture, public engineering, public health and policy (see [Brown, this issue](#)).

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