



# **State of the art report on Life Quality assessment in the field of transport and mobility**

***deliverable D2***

***public report from WP1***

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## **PREFACE**

ASI - Assess implementations in the frame of the Cities-of-tomorrow (EVG3-CT-2002-80013) – is an accompanying measure of the EC 5th Framework Program Energy, Environment and Sustainable Development in the Key Action 4: Cities of Tomorrow and Cultural Heritage. Partners from five different countries are involved in the project:

1. FACTUM OHG, Austria
2. Swedish National Road and Transport Research Institute, Sweden
3. University of Groningen, The Netherlands
4. Università degli Studi Roma Tre, Italy,
5. Centrum dopravního výzkumu, Czech Republic

The main objective of the project is to provide knowledge about the practice of life quality assessment by different disciplines in connection with different types of public measures in the area of town planning and design, transportation and mobility.

Transport and mobility play an important role in the concept of LQ as they are central elements of the integration in society. Due to the strong engineering focus taken in this area so far, too little action has been taken to understand, what difficulties different groups and sub-groups of people have with transport and mobility, as the need and interests of the relevant segments of the population are not considered appropriately. Solutions in the transport and mobility area developed according to the methods suggested in ASI, will be more effective and more efficient, because they meet the needs of the target groups, i.e. different groups of citizens in different parts of Europe.

ASI wants to improve the understanding of the assessment of groups of citizen's LQ by responsible politicians and experts. This will be done by the analysis how mobility policies of five implementations in the frame of LUTR (Land Use and Transport Research Cluster) viz. of the Key Action Cities of Tomorrow (CoT) affect LQ, according to the peoples who are involved in these project in responsible roles. Evaluation will be based on expert interviews, dealing with the following questions: How is LQ of different groups of citizens affected by town planning, transport and mobility conditions and how is it assessed by the responsible people. The main product of ASI will be an advice for improved assessment processes. The product will consist of a toolbox for the assessment of LQ in connection with town planning, transport and mobility, a databank concept, and guidelines for implementations. The developed instruments will be tested in a pilot study.

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# 1. QUALITY OF LIFE – A HISTORICAL PERSPECTIVE

Quality of life is a concept, which in recent years, has generated a great deal of interest but it is not only a notion of the twentieth century. Rather it dates back to philosophers like Aristotle (384-322 BC) who wrote about 'the good life' and 'living well' and how public policy can help to nurture it. Much later, in 1889, the term quality of life was used in a statement by Seth: "...we must not regard the mere quantity, but also the quality of the "life" which forms the moral end". (in Smith, 2000).

This was then followed by a surge, in the 1930s, when researchers started to show a real interest in the subject and several attempts were made to define, investigate and measure the concept (Massam, 2002). Quality of life also emerged on the political agenda. Edgar Hoover, for instance, was behind Ogburn's two-volume report on recent social trends. A report that was partially instrumental in a movement dealing with social indicators and quality of life (Massam, 2002). To start with the aforementioned scientist would mainly be concerned with measuring material wealth as an indicator of quality of life. However, during the depression a Baltimore journalist published a series of articles that presented the ratings of quality of life (QoL) in cities and states. His ratings included objective factors such as: 'income, education, crime rates, housing prices and infant mortality' but also subjective one's such as people's feelings about their neighbourhood and the environment (Mitra, 2003).

In the 1950s two economists, namely Ordway (1953) and Osborn (1954), used the term in an argument against unlimited economic growth. Four years later Galbraith published his book 'The Affluent Society' followed by 'The Industrial State' in 1967. In these books he discussed the consequences of growth and he criticised the economic ideology behind the expansion of industry, he states: "What counts is not the quantity of our goods but the quality of life" (in Snoek, 2000). In the second half of the twentieth century scientists came to realise that QoL included more than material wealth thus other factors such as health, education, personal freedom, enjoyment and welfare were included.

In the 1970s the general question on the agenda was "how can you live happily and well?" (Leitlinie Dermatologie/Lebensqualität in dermatologischen Studien, 1998). A question, which caused research in the area to flourish. In addition to the above Massam (2002) added that it was the advancement within the area of computer science, which encouraged the movement to blossom and he also, quotes the launch of a specialised journal "The Social Indicator Research" as an important milestone. By the 1990s some large research centres had started to study the quality of life of its inhabitants. For instance, in 1994 a research centre in Denmark was opened to study the lives of 10.000+ Danish people. During the same period, on the other side of the Atlantic Ocean, in Canada the Ministry of Health funded a survey that studied the quality of life on a national level. At the beginning of the new Millennium Smith concluded in his review of the literature that "Quality of life is currently underpinning a significant proportion of new social science research" (Smith, 2000).

## 2. QUALITY OF LIFE – A DEFINITION

Although the notion of quality of life (QoL) has been the focus of numerous studies a consensus as to how it should be defined has not been reached. Several authors have pointed out that there are numerous definitions but no universally accepted one (Ormel, Lindenberg, Steverink, and Vonkorff, 1997; Lim, Yuen, and Low, 1999; Smith, 2000; Snoek, 2000; Wunsch and Risser, 2002).

Some definitions are very general like Dalkey and Rourke who offered this broad definition: "a person's sense of well-being, his satisfaction or dissatisfaction with life, or his happiness or unhappiness" (in Ferrans and Powers, 1985). Or Martin and his colleagues who stated that it describes the: "individual's overall satisfaction with life and their general personal well-being". In these definitions "well-being" and "satisfaction" are used, which is not unusual. Quality of life, well-being, satisfaction but also health status, happiness and self-esteem are often used interchangeably (Felce and Perry, 1995; Lim, Yuen and Low, 1999; Snoek, 2000; Ranzijn and Luszcz, 2000). This is something, which only further complicates the matter (Felce and Perry, 1995). To use personal satisfaction as synonymous with quality of life would according to the same authors be most unfortunate, especially if no consideration is given to the persons life condition: "...expressions of satisfaction are themselves relative to the individual's temperament and the circumstances and experiences that have shaped their frame of reference". They strongly argue that a definition needs to assess both objective and subjective circumstances, or as Emerson (1985) defines quality of life: "as the satisfaction of an individual's values, goals and needs through the actualisation of his/her abilities or lifestyle" (in Felce and Perry, 1995). The need to include life conditions was also emphasised by Clark (2000) who suggests "...that quality of life for an individual is affected significantly by his or her social environment" (in Massam, 2002).

However, despite the lack of consensus it is possible to discern some form of agreement. For instance, most researchers would argue that it is a multidimensional construct (Cummins, 1999; Snoek, 2000; Hagerty, Cummins, Ferriss, Land, Michalos, Peterson, Sharpe, Sirgy and Vogel, 2001) and that it reflects personal values (Snoek, 2000). It can therefore be said to reflect how well individual needs are fulfilled in various fields of life (Wunsch and Risser 2002). Three different dimensions have been proposed; physical, psychical and social (Finlay, 1997; Snoek, 2000; [www.uni-duesseldorf.de](http://www.uni-duesseldorf.de)). The social dimension is further divided into a public and private domain. In addition to these three dimensions most researchers would argue that the definition should include both objective and subjective elements (Cummin, 1999; Ranzijn, and Luszcz, 2000; Hagerty, et al., 2001).

The dimensions can be illustrated as follows:

1. *Physical* – health status;
2. *Psychical* – self mastery, self-efficacy, love, satisfaction, happiness, morale, self-esteem, perceived control over life, social comparisons, expectations of life, beliefs, aspirations;
3. *Social (private)* – social network, social support, level of income, education, job. *Social (public)* - community, climate, social security, quality of housing, pollution, aesthetic surroundings, traffic, transport, incidence of crime, equality, equity.

The three dimensions interact with each other and if one domain changes then the others will follow. For instance, studies have found that social interactions result in improved self-esteem and personal and social competencies (Lloyd, and Auld, 2002). Furthermore, a high self-esteem might affect the person's aspirations and increase his/her perceived control over life. Thus, one change might precipitate change in other areas as well. Diener (2000) also pointed out that QoL is judged in comparison to certain standards. These standards are coloured by our aspirations, by how we felt yesterday and by our perception of others.

### **3. QUALITY OF LIFE INDICATORS**

During the 1970s decision makers came to realise that economic measures such as Grand Domestic Product (GDP) was not sensitive enough to monitor social development. This then gave rise to a movement called the social-indicator movement (Frankenhaeuser, 1976). Researchers looked in to a number of indicators, which could help to describe, predict and improve quality of life (Massam, 2002). The quest was to find a significant number of indicators that would allow monitoring change over time on both an aggregated and disaggregated level. Andrews and Withey, (1976) outlined the aim of the indicators as follows:

"The set of indicators should be "limited" so they can be understandable and not overly detailed, lengthy, or complex. The indicators should be "comprehensive" so that a substantial proportion of the most salient or critical aspects of society are included". (Andrews and Withey, 1976).

In an OECD report from 1971 the need for sophisticated social indicators was highlighted. Indicators which would act as: a system of "early warning" of growing imbalances, social disbenefits, dissatisfactions and merging social needs".

One other way of describing an indicator is that it is an instrument, which helps to measure quality of life (Röthlisberger, 2001). Before discussing how to measure QoL it is worth looking at the two main indicators types, namely the subjective and the objective ones, in more detail.

#### **3.1 Subjective and objective indicators**

As we have understood, both objective and subjective criteria can be used when trying to measure quality of life. Objective ones represent external life conditions such as economical and technical factors and subjective ones represent the individual's appraisal of these conditions. Nowadays most would agree that objective and subjective indicators should be combined (Glatzer, 1990; Ormel et al., 1997; Baaske and Sulzbacher 1997; Felce and Perry, 1995; Cummin 1999; Cummins, 2000; Hagerty et al., 2001; Cozens, 2002; Kim and Cho, 2003). Some would even go so far as to say that this is a common sense view (Cummins, 2000). However, not everybody would agree with this and some studies have dismissed the individual perception of life and only measured objective variables. One important reason for this is that subjective variables are seen as "soft" measures that are difficult to assess and interpret (Lloyd and Auld, 2002). Besleme, Maser and Swain (1999) reported that they tried to introduce subjective measures but that the business community were opposed to this arguing that it was too "touchy-feely", something which they believed had no place in the development process. One example of a study where only objective indicators were used is

Giannias (1998) who drew a link between quality of life and structural characteristics of the house: "The choice of a house is equivalent to a choice of a quality of life value". Variables included in the index could be the number of rooms, age of the house but also factors related to site and urban attributes (i.e. annual temperature of a city, air pollution and crime rate). This approach is not uncommon and other studies have included some, or all, of the above variables (e.g. Blomquist, 1985; 1988; Roback, 1982; 1988) (in Giannias, 1998).

Another example is the work carried out by local government in Korea who are making increased efforts to measure QoL by the sole use of objective indicators such as crime rates, income and employment rate (in Kim, and Cho, 2003).

On the other extreme, objective criteria's are seen to be largely irrelevant. Andrews and Withey (1976) dismissed the distinction between O and S indicators. They would argue that the only way to experience the world is through our senses and therefore the so-called 'objective' measure is a product of the same:

"It has become common to divide social indicators into two types – objective and subjective. We believe, however, that this classification is neither clear nor very useful. Even birth and death and what defines human life are currently matters of legal, medical, and doctrinaire dispute. Presumably objective indicators of these matters turn out to involve subjective judgements. Conversely, it can be argued that many subjective indicators (such as people's evaluation of their lives) provide rather direct and objective measurements of what they intend to measure". (Andrews and Withey, 1976).

Researchers in the area of QoL would undoubtedly agree that objective conditions such as income, crime rate and so forth affect person's attitudes towards his/her quality of life. So the question is if objective criteria also help to explain QoL over and above the individual perception of the same.

Studies looking at the relationship between objective and subjective measures report a correlation coefficients in the range from 0.04 to 0.57. This would then suggest that they measure rather different aspects of quality of life (Fakhoury, and Priebe, 2002). A number of other studies confirm this. For instance, the association between objective health status and subjective life quality is very weak (Snoek, 2000; Salyer, Flattery, Joyner, and Elswick, 2003). Cancer patients do not report lower level of well-being than a healthy control group. The same has been found with regard to people with severe disabilities a group who were not more dissatisfied with their health, some would even argue that they were completely satisfied (Snoek, 2000). Rate of crime and subjective safety is another example where the relationship is very weak (Wolfgang and Sulzbacher, 1997). Expressions of satisfaction also failed to differentiate between individuals whose living environment differed markedly on many objective characteristics (from hospital wards to community housing) (Holland, 1990: In Felce and Perry, 1995). The poor link between living conditions and subjective well-being was also confirmed by Baier (1992) and Frankenhaeuser (1976). In two further studies comparing economically deprived areas to more affluent regions the result showed no difference in how the people perceived their level of satisfaction (Wilkening and McGranaham, 1978; and Amos, et al., 1982). Two possible explanations were offered by Smith, (2000): One that it would be an effect of social comparison, individuals within one community did not see their lives as different from others, the other was that they accepted their own position.

Edgerton (1990) argued that significant changes in a persons living situation might also change QoL but that the effect is only temporary. Shortly afterwards the level would be the



same as before. It has been suggested that individuals adapt to changes in their lives by changing their expectation and goals (Diener, 2000). In the case of people with health problems an adaptation takes place to their changing circumstances, trying to make the best of their lives (Snoek, 2000).

Other studies have also shown that the relationship between objective and subjective QoL is non-linear. Or as Durning (1993) pointed out "People living in the 1990s are on average four-and-a-half times richer than their great-grandparents were at the turn of the century, but they aren't four-and-a-half times happier". Over and above a certain level an increase in wealth will have little or no effect on QoL (Cummins, 2000).

So the old notion that the quality of life would continue to improve with increasing material wealth has to be abandoned. Indeed, studies have found that when people's basic needs are guaranteed they will start to develop others "like demands for greater influence and participation, for awareness of one's role in the community, for a sense of purpose, opportunities for meaningful work and for the realisation of personal talents and abilities" (Frankenhaeuser, 1976).

It is perhaps not surprising that the relationship between objective and subjective indicators is very weak but that does not necessarily mean that one is more important than the other. Lehman (1988), for instance, used the poor relationship as an indication that both should be assessed. Only then, he would argue, would we be able to provide a full picture of QoL (in Fakhoury and Priebe, 2002).

According to Lim, et. al. (1999) the main advantage of using objective indicators is that they can be quantified, or as they put it: "Objective measures comprise tangible, objectively verifiable aspects of living".

Having said that they would also argue that without subjective indicators the results might not be very useful since they fail to capture people's experience of life. Lim, et. al. (1999) concluded that indicators of QoL should at least include the respondent's assessment of their lives such as: health, housing, education, recreation, arts and culture, families and community. Diener and Suth (1997) also pointed out that subjective and objective indicators provide alternative views of societal quality and will therefore be a more correct measure of the same (In Lloyd and Auld, 2002).

Thus individuals own experience of life and the environment in which life is experienced contribute to a person's quality of life. Rogerson (1999) summarised this into two arenas; one material and one personal, see figure 1.

**Figure 1. A conceptual view of quality of life**

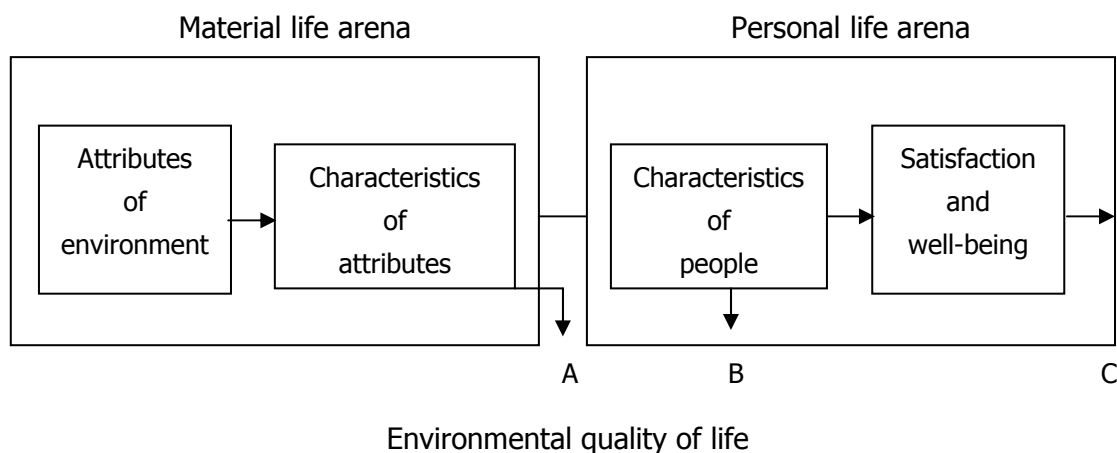


Figure 1 shows that QoL involves two elements: an identification of the preferences and an evaluation of the same. The model recognizes that people's tastes, aspirations and value systems vary. The different letter in the figure describes different forms of assessment. A stands for studies assessing the material life arena; B the individual characteristics of people and C the cognitive and affective reactions to life itself.

To include objective indicators makes it possible to compare and contrast the QoL of collective groups and locate those groups within a spatial reference (e.g. nations, regions, cities and neighbourhoods). Felce and Perry (1995) argued that aggregated data can help in establishing whether quality of life is evenly distributed or narrowly clustered, or to put it differently, it provides us with a standard of reference. They would even go so far as to say that:

"A definition of quality of life that ignores objective assessment of life conditions may, therefore, not provide an adequate safeguard for the best interests of vulnerable and disadvantaged people. Expressions of satisfaction may simply reflect the intractability of conditions commonly experienced by those with limited skills, autonomy, and attachment to the mainstream society and its economy". (Felce and Perry, 1995).

This would then be more sensitive to the reported level of satisfaction with his/her living conditions while at the same time maintaining a more independent perspective on those circumstances.

It could therefore be concluded that the relationship between objective and subjective indicators are very weak and that the latter are a better predictor of QoL than the first. Nevertheless, it would be wrong to conclude that objective measures are surplus to requirement. Accordingly it becomes important to distinguish between subjective and objective measure and as Cummins (2000) pointed out this is something that: "lies at the heart of an integrated, a comprehensive understanding to the construct".

## **4. HOW TO MEASURE QUALITY OF LIFE**

In the last decade various instruments have been developed to measure quality of life. Despite this Ranzijn and Luszcz (2000) would argue that one problem in research into quality of life is the lack of standardised measures. However, Cummins (1999) expressed a more positive view arguing that researchers have started to share common grounds. He admitted that a consensus had not been reached about how to define QoL but despite this some trends towards mutual agreements had begun.

A number of different models measuring QoL have been presented. Poortinga, Wiersma, Steg, Vlek, Noorman, Moll and Schoot, (2001) proposed twenty-two different QoL indicators (see Table 1).

**Table 1. Quality-of-Life aspects and their description.**

<b>Aspect</b>	<b>Description</b>
Aesthetic beauty:	Being able to enjoy the beauty of nature and culture.
Challenge/excitement:	Having challenges and experiencing pleasant and exciting things.
Change/variation:	Having a varied life. Experiencing as many things as possible.
Comfort:	Having a comfortable and easy daily life.
Education:	Having the opportunity to get a good education and to develop one's general knowledge.
Environmental quality:	Having access to clean air, water and soil. Having and maintaining a good environmental quality.
Freedom:	Freedom and control over the course of one's life, to be able to decide for yourself, what you do, when and how.
Health:	Being in good health. Having access to adequate health care.
Identity/self-respect:	Having sufficient self-respect and being able to develop an own identity.
Leisure time:	Having enough time after work and household work and being able to spend this time satisfactorily.
Material beauty:	Having nice possessions in and around the house.
Money/income:	Having enough money to buy and to do the things that are necessary and pleasing.
Nature/biodiversity:	Being able to enjoy natural landscapes, parks and forests. Assurance of the continued existence of plants and animals and maintaining biodiversity.
Partner and family	Having an intimate relation. Having a stable family life and having good family relationships.
Privacy:	Having the opportunity to be yourself, to do your own things and to have a place of your own.
Safety:	Being safe at home and in the streets. Being able to avoid accidents and being protected against criminality.
Security:	Feeling attended to and cared for by others.
Social justice:	Having equal opportunities and having the same possibilities and rights as others. Being treated in a righteous way.
Social relations:	Having good relationships with friends, colleagues and neighbours. Being able to maintain contacts and to make new ones.
Spirituality/religion:	Being able to live a life with the emphasis on spirituality and/or with your own religious persuasion.
Status/recognition:	Being appreciated and respected by others.
Work:	Having or being able to find a job and being able to fulfil it as pleasantly as possible.

The above attributes are randomly ordered and cover a number of different areas: personal, social and environmental. It is based on different research on basic human values, subjective well being and quality of life.

Andrews and Withey (1976) presented the results from a questionnaire including 123 items starting with how they feel about their immediate environment like children and wife/husband and then gradually moving away from this to people who live in the houses/apartments near them, the particular neighbourhood as a place to live, nearby places for recreation or sports and the way the police and courts are operating in the area to mention only a few of the questions.

The WHO recently developed one which included 100 questions and short-version of 26 question. The critic raised against this test is that it fails to adequately assess the quality of life of an older population (in Smith, 2000). Leitmann (1999) described how quality of people's life was determined in Leicester, UK. Three steps were outlined:

1. *A quantitative and a qualitative study*: The first consisted of a short questionnaire sent to all residents in the area and the second was an interview with 800 citizens.
2. *Consultation with stakeholder*: Different stakeholders (young people, the disabled, business, women's groups, ethnic minorities, trade unions and faith groups) were invited to give a response to the material presenting future urban QoL.
3. *Selection of 14 core QoL indicators*: the information from Step 1 and 2 were summarised in Step 3. The final indicators were: homelessness; satisfaction with neighbourhood; perceived improvement in the city centre; levels of earned income; unemployment rate; energy use; loss of good quality wildlife habitat; air quality; river and canal pollution; asthma levels; violent crime; educational attainment; mode of transport to work; and rate of domestic refuse collected.

Leitmann (1999) concluded that indicators should have the following characteristics:

*Measurable* – indicators should be quantifiable;

*Based on existing data* – when possible, indicators should be derived from reliable existing information to speed up their use and minimise costs;

*Affordable* – the financial cost and time required to assemble and analyse indicators should be prescribed by a predetermined budget;

*Based on a time series* – the same indicator should be collected over a regular interval so that change can be evaluated;

*Quickly observable* – indicators should change as conditions change so that they can accurately reflect reality;

*Widely accepted* – indicators should be understood and accepted by their users;

*Easy to understand* – indicators should be reported in a simple fashion so that a wide range of people can understand them; and

*Balanced* – indicators should be politically neutral and allow for measurement of both positive and negative impacts.

## 4.1 Assessment and the use of rating scales

All subjective responses are assessed by the use of a rating scale, which consists of a number of response alternatives, and the subject is asked to make a judgement of the same on a scale. The most common techniques use either a Likert type scale (e.g. 1=Very satisfied, 2=Satisfied, 3=Most satisfied, 4=Dissatisfied, 5=Very dissatisfied) or a bipolar scale in which the score is located on a single dimension (e.g., Delighted - Terrible). The individual is asked to evaluate each item and then rate the same somewhere between the two extreme positions. In some studies the respondents would be forced to answer and in others they have an option to opt out if the question does not apply. The latter approach was used by Andrews and Withey (1976) to measure affective quality, see table 2.

**Table 2. Categories used for assessing affective evaluation**

7	6	5	4	3	2	1
Delighted	Pleased	Mostly satisfied	Mixed (about equally satisfied and dissatisfied)	Mostly dissatisfied	Unhappy	Terrible

<b>A</b>	<b>NEUTRAL (NEITHER SATISFIED NOR DISSATISFIED)</b>
<b>B</b>	I never thought about it
<b>C</b>	Does not apply to me

However, the inclusion or exclusion of the 'don't know' alternative has given rise to considerable debate. Schuman and Presser (1981) argued that the proportion of people who favour an alternative and those who oppose it is the same regardless if it is included or not (in Himmelfarb, 1993). Krosnick and Schuman (1988), on the other hand, found that people with weaker attitudes tend to select the 'don't know' alternative if it is offered.

Another perhaps less traditional way to measure QoL is the SASS (The self-Anchoring Striving Scale - SASS). The respondent is confronted with a 10-step ladder and then asked, "where on the ladder would you place your present life?" Each step has a descriptor and the base of the ladder is illustrated with a zero and labelled "the worst you can imagine and the top rung is labelled "10 the best you can imagine". (Beckie and Hayduk, 1997).

The results using these various scales sometimes fail to present a normal distribution. Campbell, Converse, and Rodgers (1976) obtained a markedly skewed distributions when they used a scale that ranged from "Completely satisfied" to "Completely dissatisfied" (in Andrews and Withey, 1976). However, this appears not to be that uncommon and several studies have found a bias towards the more positive side (Bowling, Banister, Sutton, Evans and Windsor, 2002). A bias that has been described as 'social desirability'.

One alternative approach to the quantitative one, namely a qualitative one, was suggested by Felce and Perry (2000). Interviews are sometimes used to assess one person's QoL. The interviews can be described as semi-structured, that is guided by some defined topics

otherwise the interview is open. The advantage with this method is that it is less prescriptive being able to tap a person's own view more accurately.

## 4.2 The combination of questions into domains

Most researchers believe that the questions should be combined into discrete domains. This would then help to define the different areas of life, making the construct easier to conceptualise and measure (Hagerty, 2001). However, opinions diverge when it comes to number and elements in this construct. The 22 indicators outlined above by Poortinga, et al., (2001) was summarised by means of factor analysis. The result presented seven different underlying factors which accounted for 60.4 % of the variance. The factors were labelled: Material wealth (item 15,16,20,22); Environmental quality (13,17,9); Personal freedom (4,8,14); Openness to change (10,18,19); Maturity (7,12,21); Family, health and safety (1,2,5) and Achievement (6,11). In a scale called ComQoL (Comprehensive Quality of life scale), developed by Cummins, the same number of domains were identified but the descriptions were slightly different: Material well-being; Health; Productivity; Intimacy; Safety; Community and Emotional well-being (Cummins, 1999).

The SPES – Indicator system (Sozial-Politisches Entscheidungs-System) is another model that contains ten different domains including: Population; Mobility; Employment; Income; Use of income; Traffic; Living (housing); Health; Education and Participation (Glatzer, 1990). And finally the QLI (Quality of Life Index) has 32 items that assess nine-teen different areas or domains: Health care; Physical health and functioning; Marriage; Family; Friends; Stress; Standard of living; Occupation; Education; Leisure; Future retirement; Peace of mind; Personal faith; Life goals; Personal appearance; Self-acceptance; General happiness; and General satisfaction (Ferrans and Powers, 1985).

In the paper by Cummin (1999) some additional domains namely 'Spiritual well being', 'Family and friends' and 'Leisure' were discussed. With regard to the first, and based on the results from two different studies, the conclusion was that the seven domains already presented were sufficient to measure subjective QoL. However, Spiritual well being could be added if the sample includes highly spiritual/religious people. The second domain was 'Family and friends'. In the ComQoL this domain are included in the one labelled Intimacy. This domain is described as a combination of family and friends although some studies do suggest that they should be split into two. Fraid (1995) found that elderly people rated family as more important than friends (in Cummin, 1999). However, this would not apply to university students. Hence, it would depend on the population under investigation if the domain called Intimacy should be split or not. The third domain under investigation was Leisure, a domain Cummin (1999) described as a "slippery concept". This domain overlaps with other domains such as productivity but it was concluded that it was subsumed within emotional well-being. Nevertheless, leisure might load highly on the emotional well being domain but others would argue that it might be appropriate to include this domain for developed countries where leisure is an issue (Hagerty et al., 2001).

Thus the number of possible domains varies and as Hagerty et. al., (2001) stressed, they could include almost everything. This would certainly not be very useful. In an article by the same authors the results from a study using the Delphi techniques were presented. The group proposed 14 different criteria for evaluating QoL indexes. When it came to domains they stated that they should include all aspects of life. This could, according to the group, be tested by the use of a regression coefficient. The aggregated QoL domain should be able to

predict a more global coefficient and in addition to this it should also account for a large part of the variance. Twenty-two different scales were assessed using these criteria.

The entire list of criteria identified by the committee is listed below, in some cases further explanations have been inserted in italic:

1. The index must have a clear practical purpose, i.e., a public policy purpose.
2. The index should help public policymakers develop and assess programs at all levels of aggregation (*i.e. individual, family or household, community, state, country and the international level*).
3. The index should be based on time series to allow periodic monitoring and control. *This is done in order to assess conditions and predict future ones.*
4. The index should be grounded in well-established theory.
5. The components of the index should be reliable, valid and sensitive.
6. The index should be reported as a single number, but can be broken down into components. *This choice divided the committee into two sections, for and against but the majority was for. The argument was that a single number provided policy makers with a more useful instrument helping them to determine if QoL was improving or not. However in order to combine the domains the use of weights are needed. This is something that will be dealt with separately in this paper.*
7. The domains in aggregate must encompass the totality of life experience.
8. Each domain must encompass a substantial but discrete portion of the QoL construct. *One way of testing this is that the inter-correlations between the different domains should not exceed 0.9. Another is to test the shared variance between domains.*
9. Each domain must have the potential to be measured in both objective and subjective dimensions.
10. Each domain within a generic QoL instrument must have relevance for most people.
11. If a specific domain is proposed for a non-generic instrument it must be demonstrated to contribute unique variance to the QoL construct beyond the generic domains for the target group. *The opposite can happen if several items relate to the same theme.*
12. Domains must be potentially neutral, positive, or negative in their contribution to the QoL construct. *For instance, domains dealing with pain are ruled out since pain can never be seen as positive, only neutral or negative.*
13. Domains differ from the dimensions of personality (e.g., extraversion, self-esteem), cognitive processes (e.g., cognitive dissonance), and affect (e.g., joy) in that they cannot be measured objectively. *This is related to criterion 9 but it also suggests that QoL is an end state so focus should not be on factors which affect this.*
14. The subjective dimension of each domain has both a cognitive and affective component. They are measured by questions concerning "satisfaction".

Using the 14 different criteria outlined above each index was then evaluated on a three point scale, where 3 = Excellent, 2 = Satisfactory and 1 = Not satisfactory. The results from the assessment showed that the highest score (mean value of 2.5) was given to two different indexes; Cummin's Comprehensive Quality of life scale (ComQoL) and Veenhoven's Happy Life-Expectancy Scale (HLE) and a value of 2.4 was given to an index called, Index of Economic Well Being, (IEWB). The ComQoL was said to reflect the totality of life and that it also contained discrete measures of QoL. The Veenhoven's Happy Life-Expectancy Scale measures people's life-expectancy and how happy they are (life-expectancy in years is multiplied by the average score from a happiness scale). The scale has been able to differentiate between 47 different nations. However, the committee would add that it is neither very useful in monitoring short-term impact nor in identifying particular detailed problems. The IEWB is grounded in economic theory and assesses the economic well-being. It uses concepts such as; consumption flows, stocks of wealth, inequality and economic security. However, the index rests only on objective data, which was seen as a disadvantage (Hagerty et al., 2001).

### **4.3 Different domains and their importance**

Several indexes measure both satisfaction with various domains of life and how important they are (Ferrans and Powers, 1985; Gill and Feinstein, 1994; Felce, and Perry, 1995; Cummins, 1999; Poortinga et al., 2001). In the ComQoL the product of these two questions can then be aggregated into a single measure measuring subjective well-being (Cummins, 1999).

In the review of the literature Hagerty et al., (2001) argued that relationships with family and friends are ranked as the most important domain followed by emotional well-being, material well-being, health, work and productive activity, feeling part of one's local community, and personal safety.

Results from different studies both support and reject the proposed order. Two recent studies showed that relationship with family and friends was the most important one (Smith, 2000; Bowling and Windsor, 2001). The latter study was a large Omnibus survey carried out in 1993 which identified the following six most important areas of life:

1. Relationships with family/relatives
2. Finances/standard of living/housing
3. Own health
4. Other people's health
5. Ability to work/satisfaction with work
6. Social life

Relationships with family and relatives were the most important one and social life the least. In contrast to this other studies have found that health is the most important factor and that this is followed by relationships with family (Vlek, Skolnik and Gatersleben, 1998; Gatersleben and Vlek, 1998; Foo, Yuen and Chin, 1999; Poortinga, et. al., 2001).

Measures that include the relative importance people give to various aspects of life can be used to generate a weighting structure. The recommendation from the committee discussed



in Hagerty et al., (2001) was that the seven domains should be given a different weight: Relationship with family and friends (weight = 100), emotional well-being (weight = 98), material well-being (weight = 77), health (weight = 67), work and productive activity (weight = 61), feeling part of one's local community (weight = 29), and personal safety (weight = 27) (Hagerty et al., 2001).

However, arguments have been put forward against the use of weights. For instance, Edgerton (1990) believed that only the individual could judge the trade-off between his or her own personal welfare and competing aspects. The variations amongst people is another argument used against it (Hagerty et al., 2001) and that the literature offers little support for the use of weights (Bowling and Windsor, 2001).

Thus, the use of weights is a debated topic and one way would be to use no weights, although no weighting is still a weighting, only equal. Andrews and Withey (1976) tested both approaches and found that the correlation between un-weighted and weighted was more or less the same (un-weighted 0.67 and weighted 0.71). In a later study by Poortinga et al. (2001) the relationship was even greater (0.99) suggesting that they measure the same construct.

#### ***4.3.1 Individual differences***

Individuals vary when it comes to the assessment of how important the different domains are. Bowling (1996) reported that people over 75 prioritised their own health, the ability to get around and that younger people valued relationships with family and relatives, finances and work as more important (Bowling and Windsor, 2001). Vlek et al., (1998) found that women attributed a higher importance to health, family and security and that men ranked equity as more important. In another Dutch study, using the seven domains previously discussed, demographic and socio-economic factors had an effect on how important the different quality of life aspects were. Women valued personal freedom and maturity more than men and married couples evaluated family, health and safety as more important than unmarried ones. A difference was also found which depended on income. Low or average income earners found personal freedom more important than high income earners. Finally people with a higher level of education valued achievement as more important than people with a lower level of education (Poortinga et al., 2001). In another study a list of 20 attributes were presented to 2000 people who were asked to identify the best description of a high QoL. People aged 25-44 rated provision of education as most important whereas for the over 65 years it was the provision of local health care (Rogerson, 1999).

Thus we always have to assume that individuals may differ in their assessment of different domains. Wolfgang and Sulzbacher (1997) pointed out that each domain is judged individually and is influenced, for example by reference to other people or groups; for instance, a millionaire in a group of multimillionaires might be unhappier than a poor individual in a group of hungry people. In addition to this the individual assessment is influenced by culture, society and trends.

## **5. QUALITY OF LIFE IN THE COMMUNITY**

Quality of life for an individual is also affected by his/her social environment. So in addition to a more private dimension there is a public one (Massam, 2002). Kant (1997) described QoL in terms of the "public good" which he defined in terms of minimum income, social security, health and education, equity and relationships with the community. In addition to this others have added safety from crime, low environmental pollution and reasonable house prices (Roseland, 1997); culturally desirable working and living conditions, low level of traffic (Transportation Research Board, 2001); aesthetic surroundings (Dalkey, 1972 in Andrews and Withey, 1976; Transportation Research Board, 1998); and greater influence and public participation (Frankenhaeuser, 1976).

In Colorado a quality of life indicator has been used to monitor its individual members feeling of well-being (Mueller, 2003). The definition of QoL included a number of non market items:

"clear mountain view, urban walk along high line canal, hike in community, open space, wildlife viewing on South Platte river corridor, time with children, boating on a clean river, good schools, low crime rate, low teenage pregnancy rate and so on." (Mueller, 2003)

As Mueller (2003) also pointed out the above can be enjoyed by everyone without first owning it through purchase which makes them different from marketable goods.

Studies have also found that communities who provide a high quality of life have a competitive advantage when they try to attract both individuals and businesses (Winther, 1990; Transportation Research Board, 2001; Wong, 2001). However, evidence from many different studies show that the continuing urban growth and what that entails are not sustainable and can destroy what we today value as contributing to our quality of life. It is therefore not surprising that sustainable development is linked to QoL.

### **5.1 Sustainable development and its links to quality of life**

Sustainable development is often directly or indirectly related to Quality of Life (Burden, 2001; Steg and Gifford, 2003). The term was introduced in 1980 but became better known in 1987 when the report of the World Commission on Environment and Development (The Brundtland Commission) was published. Like quality of life there is no definition that is universally accepted but one proposed by the same Commission has been cited frequently:

"meeting the needs of the present without compromising the ability of future generations to meet their own needs"...(in OECD, 2001).

Others have elaborated on the above emphasising that it should ensure that environmental, social and economic factors are considered and sustained for an unforeseeable future (see TDM Encyclopedia, 2003). Within the area of economics a distinction is made between growth (increased quantity) and development (increased quality). In the first case the focus is on market activity and the goal is that the current state should expand – bigger then also

means better. In the latter case the goal is improvement rather than growth, in some cases this can lead to expansion but in other a contraction of a more optimal scale. Development also includes non-market activities such as social and ecological (TDM, 2003). In order to achieve sustainable development another form of planning is required. The more traditional form of planning, described as "reductionism", focusing on one particular problem, become obsolete. Instead the planning process requires a more comprehensive approach dealing with a variety of problems. The planning will deal with both the present and the future and an appropriate term used to describe the latter is "intergenerational equity" that is being fair to future generations (TDM, 2003).

Sustainability therefore includes a number of different issues, some of them are presented in Table 3.

**Table 3. Sustainability Issues**

<b>Economic</b>	<b>Social</b>	<b>Environmental</b>
Affordability	Equity	Pollution prevention
Resource efficiency	Human health	Climate protection
Cost internalisation	Education	Biodiversity
Trade and business activity	Community	Precautionary action
Employment	Quality of life	Avoidance of irreversibility
Productivity	Public participation	Habitat preservation
Tax burden		Aesthetics

From TDM (2003).

In this context it is also interesting to remind us of a term used more than twenty years ago namely "eco city". This was used to describe a place where people could move freely by foot or bicycle without fear of traffic and toxins. The following ten principles were advocated (cf. Roseland, 1997):

1. revise land-use priorities to create compact, diverse, green, safe, pleasant and vital mixed-use communities near transit nodes and other transportation facilities;
2. revise transportation priorities to favour foot, bicycle, cart, and transit over autos, and to emphasise 'access by proximity';
3. restore damaged urban environments, especially creeks, shore lines, ridgelines and wetlands;
4. create decent, affordable, safe, convenient, and racially and economically mixed housing;
5. nurture social justice and create improved opportunities for women, people of colour and the disabled;
6. support local agriculture, urban greening projects and community gardening;
7. promote recycling, innovative appropriate technology, and resource conservation while reducing pollution and hazardous wastes;

8. work with businesses to support ecologically sound economic activity while discouraging pollution, wastes, and the use and production of hazardous materials;
9. promote voluntary simplicity and discourage excessive consumption of material goods;
10. increase awareness of the local environment and bioregion through activist and educational projects that increase public awareness of ecological sustainability issues.

### ***5.1.1 Sustainable transportation***

Not surprisingly sustainable development has also focused on our transportation system trying to include it under the same umbrella. The European Union Council of Ministers of Transport elaborated on this, arguing that it should be defined as follows:

- Allows the basic access and development needs of individuals, companies and society to be met safely and in a matter consistent with human and ecosystem health, and promotes equity within and between successive generations.
- Is affordable, operates fairly and efficiently, offers a choice of transport mode, and supports a competitive economy, as well as balanced regional development.
- Limit emissions and waste within the planet's ability to absorb them, uses renewable resources at or below their rates of generation, and uses non-renewable resources at or below the rates of development of renewable substitutes, while minimising the impact on the use of land and the generation of noise (in TDM, 2003).

To be able to reach important destinations is one among other factors that help to contribute to QoL of any community (Roseland, 1997). This can also be described in short by the word mobility. Mobility has been regarded as a cardinal urban value. It is sometimes related to self-sufficiency or independence (Marcellini, Pavan, Ulisse, 1989; Tacken, Marcellini, Mollenkopf, Ruoppila, 1999; Kulikowsky, Likaszewicz, Wloskowicz, Radecki, Kazebuski and Buczkowski, 2001) to be active (Mollenkopf, 1997) and to be able to enjoy a good life (Hwang, Nayak and Newport, 1999). Nowadays most journeys are done by car, which is not sustainable in the long term. Eimsbüttel (1999) argued that cars do not have to be prohibited but they should not have priority and "life quality should be guaranteed by other means of transport". Vamboterdal (1997) stated that we are now faced with the most important challenges, namely providing everybody with efficient and fast means of transport suitable to everybody's needs.

The Transportation Research Board (2001) listed four reasons why individuals and communities would value a choice of different forms of transportation:

- **To help achieve equity goals.** A lack of transportation choice limits the personal and economic opportunities available to people who are physically, economically, or socially disadvantaged. Often, such individuals have less access (or less reliable access) to an automobile, and so may face barriers to mobility in automobile-dependent communities. For example, in such communities, non-drivers may have difficulty attending school or working.

- **To serve as a back-up option for those who can drive.** People who do not habitually use an alternative mode may value its availability at some point in the future or in the case of an emergency. Most people can expect to go through periods when they must rely on alternative modes of transportation, due to age, physical disability, financial constraints, vehicle failures, or major disasters that limit automobile use.
- **To increase transportation system efficiency.** Use of alternative modes can help achieve certain transportation demand management (TDM) objectives, including reduced traffic congestion, facility cost savings, and environmental quality.
- **To increase liveability.** Many people enjoy using alternative modes such as walking and bicycling, or riding the bus, and they value living in or visiting a community where these activities are safe, pleasant, and readily available.

In this list the achievement of equity is related to accessibility, another concept closely linked to QoL. However, this should not be confused to mean mobility. The Transportation Research Board (2001) defined accessibility and mobility as follows:

“Accessibility relates to the ease with which specific locations or activities can be reached; mobility refers to a person’s ability to move about”.

Thus accessibility is affected by the range of transportation choices available but also to travel time, safety and cost. In the local context it describes how easy it is to reach different destination by the use of non-motorised modes of travel. Burden (2001) added that it should be possible to reach most facilities needed within a household in 5 minutes and 10 minutes. Fremantle (a city in Australia) can be used as an example of a city that is accessible and has managed to be built around people rather than cars. In a recent survey people were asked to assess this city and the results showed that 69 percent rated it as ‘very desirable’. Yiftachel and Hedgcock. (1993) argued that this was because the centre had not grown too much and could offer a range of recreational activities close to one another including: street cafés, markets, shopping, art galleries, restaurants and residential accommodation.

## 5.2 Improving the quality of life of citizens

In some cities it is only the able bodied with access to a car that are free to choice, others face an inaccessible transport system. Morton (1995) pointed out the different problems an elderly pedestrian can experience. For them going out is a great challenge and the sheer volume of cars and its speed is very intimidated. In another study a number of indicators related to safety and accessibility were identified including: vehicular speed, pedestrian accidents, the quantity and quality of pavements, the number of services within walking distance and facilities for people with disabilities (PROMPT, 2003). It could therefore be argued that many quality of life and social equity goals remain to be fulfilled.

A number of projects, many of them funded by the European community, address this problem trying to improve the mobility for people who need special provision.

For example to improve the conditions for pedestrians and cyclists traffic calming has been introduced throughout Europe. Some projects suggest wider sidewalks (Mollaroli, 1997;

Pilieri, 1999), improved lighting (Vegega and Levy, 2000), interconnected pedestrian paths (Mollaroli, 1997) and resting areas (Corazza and Martincigh, 2001). Walking can sometimes be very dangerous for the visually impaired. Different devices have therefore been developed to enable people with disabilities to be mobile. One device for the visually impaired is a radio beacon system, which alert the person when they reach a junction, entrances to shops, subways and so forth (Kulikowsky et al., 2001).

Researchers have also become aware of that public transport needs to be improved to also suit people with disabilities. This group often finds it difficult to enter buses thus low floor buses has been introduced to make them more accessible (Balschbach, 1997; Caiaffa and Tyler, 2001). The elderly needs more time to process the information and one way to solve this according to Hekstra (1999) would be a dynamic information system (Tacken, et al., 1999). A number of other projects have also tried to improve the information to people with disabilities (Waara and Ståhl, 2001; Tacken, et al., 1999). Service routes bringing bus services closer to the residents and call a ride are other solutions (Ståhl, 1997; Divieti, 1997; Busi and Ventura, 1997).

A great deal of studies focus on various needs trying to improve the conditions for its citizens. The needs resemble those already identified as promoting QoL but, in many cases, this is not acknowledged. Instead the reference to QoL is implicit. However, some studies include the concept in the description and sometimes the aim of the project is to improve the same. For example, four studies in this review made a link between independency/mobility and quality of life (Caon, 1999; Tacken et al., 1999; Mollenkopf, 1999; Kulikowsky et al., 2001;) In the case of Kulkowsky et al., (2001) the target group was the blind, for Caon (1999) children and for Tacken et al., (1999) and Mollenkopf, (1999) it was the elderly. The focus of Pillieris (1999) study was to make commercial areas more suitable for pedestrians by improving both safety and comfort. An assessment of pedestrian flows was carried out in order to evaluate the quality of the infrastructure. Wider sidewalks and urban furniture were suggested. They also concluded that: "few implementations in urban environment lead to remarkable positive changes in the weakest road users behaviour and as a consequence improvement of the quality of life".

Nardi (1997) used the number of crashes as an indicator of QoL. For Lentini and Occhiuto (1991) QoL meant the promotion of a new culture which respected the environment, the need for human space and liveability. Other important factors mentioned in the report were the prevention of accidents and crime. The town also had to be made more accessible. They stressed the need to assess the relationship between mobility and life quality. In the study liveability was referred to as the existence of services including parking, pedestrian crossing and bus stops. Finally, The Bristol Local Transport Plan tried to improve the quality of life by taking the needs of people into account and to involve them in the decision making process (Albrechts and Verachtert, 2002).

### **5.3 Public participation in the community**

The principles of sustainability and planning include comprehensive analysis that considers economic, social and environmental impacts. The information required to reach this goal needs to be based on a thorough understanding of how the various factors interact, what the goals are and its long term effect. As previously pointed out one of the goals is to meet the needs of both present and future generations. Therefore an understanding of the problem should also consider the needs and interest of citizens. One critical element to achieve this goal is participation and according to an OECD report "Participation can be the key to community acceptance and ownership of change, and this is a vital process for

achieving sustainability in cities". (OECD, 1996). Burden (2001) also pointed out that the public expects to be part in shaping different plans and projects. Other reasons for involving the public are (cf. Risser and Lehner, 1997):

- **Participation reflects a basic democratic principle:** Within the notion of democracy lies participation. In order to achieve this the process needs to be transparent and open for discussions. This could then serve two purposes, one is to inform the other is to receive feedback.
- **It helps to avoid conflict:** a continues exchange of information, and a willingness to alter priorities in the face of changed circumstances, help to convince the public of the credibility of the system which in turn helps to avoid conflicts.
- **Participation can be seen as a down-to earth source of practical assistance:** Something that is often forgotten is that the population can provide some valuable information as a complement to what practitioner and experts already know.

Politicians and decision makers have started to realise that public involvement is often a very important factor but sometimes citizens are involved too late. It is fairly usual that formal decisions are taken at the level of 'town and country planning'. At this stage the needs of the residents are not considered, or at least very little. It is not until the following step dealing with the location of buildings or other land use when their voices can be heard, if at all. This can be a real problem since mistakes already made can be difficult to correct. Different projects have shown that letting people in the community participate actively can be very helpful when it comes to identifying the problem and giving feedback when it comes to drafting and implementing the project.

In one project, which aimed to improve the safety outside a school, parents, teachers and children were involved. Children were asked to draw maps and point out the most dangerous places (Passigato, 1997). In another project the aim was to improve the social life and living conditions for elderly people. With the help of the people in the community it was possible to formulate a list of problems, a document that was the starting point before the re-design started (AA.VV, 2000). Vamboterdal (1997) would argue that public participation in the planning process is fundamental. For the planners in Donostia-San Sebastian this was also crucial since it guaranteed success (Busi and Pezzagno, 1999). In some projects the public are also involved in the draft of the proposal and the implementation phase. In a project called ROM-PROJECT GHENT CANAL ZONE the inhabitants were involved in three different stages:

- 1) Consultation with regards to problem identification: questionnaires were given to inhabitants selected at random from the neighbourhoods
- 2) Consultation with regards to draft proposals for plans/programs: in each residential quarter of the area, a neighbourhood meeting was held to discuss the proposals. Leaflets and ROM newspapers were used to announce the meetings.
- 3) Consultation and co-decision-making in the implementation phase and future planning processes. (Albrechts and Verachtert, 2002).

It could therefore be argued that the chances of success is greater if the public are involved but there are also other reasons which has a strong link to QoL namely developing a strong bond to their community. Cochrun (1994) defined this as a "sense of community" in which:

"People who have a strong sense of community feel like they belong in their neighbourhoods, they believe they exert some control over what happens in their neighbourhoods while also feeling influenced by what happens in them, and they believe that their needs can be met through the collective capabilities of their neighbourhoods".

In the above quotation a number of needs, earlier identified as enhancing QoL, include; being able to exert some control, to feel needed and the interaction with others. Thus public participation serves many important purposes which helps to increase QoL.

## **6. CONCLUSION**

Quality of life is a concept that once generated a great deal of interest – even as far back as Aristotle and Plato – and now does once again. What's changed of course are the methods used when studying the concept.

To start with QoL was measured using only objective indicators such as income, climate, mortality, crime rate. Gradually scientists became increasingly dissatisfied, arguing that objective indicators failed to capture the complexity of human life. This then further led to including subjective variables measuring an individual's level of satisfaction. The concept itself has been defined in many ways although most would agree that it is multidimensional and that it refers to the fulfilment of needs. How to measure QoL has been widely debated and there is still a lack of standardised measures. Despite this in the last twenty years progress has been made and some form of agreement can be seen. The questions asked should of course be relevant to the target group and in order to achieve this goal a bottom up rather than a top down approach is sometimes suggested. The questions also need to be sensitive to change and measure both positive and negative impact. Most researchers agree that the different questions asked should be combined into discrete domains. This will then help to define different areas of life. With regard to the individuals immediate environment domains such as: family and friends, health, safety, security, freedom, occupation and standard of living are many times included. If the purpose of the study is to look at community life then factors such as: safety, transportation choice, accessibility, scenery, environmental quality, equity and public participation can be added.

The order of importance is an area that frequently has been discussed and some have proposed that family and friends are the most important factors others that it is health. The conclusion might well be that we will never arrive at a specified order because of individual variation. This report showed that the priorities are different between young and old people, men and women, married and unmarried, low income earners and high income earners, people with higher education and people without and the list can probably be even longer. Thus any measure of QoL has to consider individual differences but also social and economic circumstances. It would be wrong to assume that the above groups are distinct since variations within groups also exist.



QoL is sometimes related to another concept namely sustainable development. The definition of the latter states that individual needs should be considered and satisfied but it also adds a more long-term view by focusing on the need of both present and future generations. A great deal of work has been done in the area, both on a theoretical and practical basis. Most agree that mobility is important but that the sole use of the car is not sustainable. Therefore transportation choice is looked at more deeply both when it comes to modes of transport but also how to provide for people with different needs. Researchers have also come to realise that a community can only satisfy the public's needs if the latter are involved in the decision making process. A number of studies present some very interesting results where the community has been involved in the whole process. Some, but not all, decision makers have started to understand that the success of a project relies on public participation, they do not only help to identify the problems but also to formulate solutions. In addition to this it could be argued that public participation helps to enhance QoL since a number of important needs have the potential to be fulfilled, that is: being able to exert some control and to feel needed and part of the community

In this review of the literature it was not hard to find research projects trying to improve the quality of life of citizens. Some of these reports use the word QoL but fail to both define and measure it. Others do not use the term in an explicit way but the focus is closely linked to different needs and how they could be satisfied. To allow basic access for both able and disabled people, to reduce emissions and noise, to increase safety and security are some of the areas addressed in these papers. In both cases it is assumed, implicitly, that the proposed implementation will enhance QoL. The conclusion is therefore that this is a field that needs to take a closer look at QoL, how to define and measure it, only then will we be able to monitor, predict and improve QoL.

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