

University of Groningen

Environment and quality of life

Perlaviciute, Goda; Steg, Linda

Published in:
Environmental psychology

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2012

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Perlaviciute, G., & Steg, L. (2012). Environment and quality of life. In L. Steg, A. E. van den Berg, & J. I. M. de Groot (Eds.), *Environmental psychology : An introduction* (pp. 107-118). Wiley-Blackwell.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

11 Environment and quality of life

Goda Perlaviciute
University of Groningen, The Netherlands

Linda Steg
University of Groningen, The Netherlands

CHAPTER OVERVIEW

11.1 INTRODUCTION 108

11.2 QoL: OBJECTIVE AND SUBJECTIVE MEASURES 109

11.3 QoL: UNIDIMENSIONAL AND MULTIDIMENSIONAL MEASURES 110

11.4 ENVIRONMENT AND QoL: RESEARCH OVERVIEW 111

Which QoL aspects are most important? 111

To what extent is QoL sustained in certain situations? 113

How does QoL differ with varying environmental conditions? 114

How do environmental transformations influence QoL? 115

11.5 SUMMARY 117

GLOSSARY 117

SUGGESTIONS FOR FURTHER READING 118

REVIEW QUESTIONS 118

11.1 INTRODUCTION

Imagine a strict pro-environmental programme going on. Meat and fish consumption is reduced to minimum, household energy use is severely restricted and biodiverse areas are prohibited for people to enter. From an ecological standpoint, this programme would be considered sustainable, as it helps the natural world to remain intact and long-lasting. However, such a stringent initiative would threaten human well-being due to drastic behaviour changes and reduced comfort. Probably, people's quality of life would diminish and public resistance to the programme would be strong. Could we still label the programme as sustainable?

In this chapter, we argue that a purely ecological perspective on **sustainability** is too limited and that a human perspective should also be considered. We approach sustainability as well-balanced relationships between humans and their environments. Sustainability involves finding a balance between **environmental**, **social** and **economic sustainability** aspects (World Commission on Environment and Development, 1987). For example, consider an initiative to increase fuel prices in order to reduce CO₂ emissions. The sustainability of such an initiative cannot be assessed without considering social and economic consequences. Some people, especially those with a lower income, may have to give up their car, which may increase social inequity. Household purchasing power may decrease, whereas cash flows to the fuel industry may increase. To achieve sustainable development, sustainability of any of the three aspects (environmental, social or economic) should not seriously impede sustainability of the other two.

To monitor the balance between the three aspects, sustainability criteria are needed for each of them. Adequate criteria have been developed for environmental and economic qualities (see Steg & Gifford, 2005). Environmental sustainability criteria include, for instance, energy consumption rates and carbon dioxide emissions. Economic sustainability criteria cover, among others, levels of purchasing power and inflation rates. Social sustainability can be measured on a societal or individual level (see Table 11.1). On the societal level, well-being of a society is studied as a whole. On the individual level, well-being of individuals comes to the foreground. Social sustainability measures applied so far are typically grounded in the societal level, for example, average lifetime and public health.

In this chapter, we introduce a measure of **quality of life** (QoL) as a way to assess social sustainability on the individual level. We define QoL as the extent to which important needs and values of individuals are satisfied (Diener, 2000), which depends on a person's physical, economic and social environments. For example, being surrounded by nature may enhance your health (see Chapter 6). Or, a strong economy is more likely to satisfy people's needs for work and income than a weak economy.

Environmental Psychology: An Introduction, First Edition. Edited by Linda Steg, Agnes E. van den Berg, Judith I. M. de Groot.

© 2013 the British Psychological Society and John Wiley & Sons, Ltd. Published 2013 by the British Psychological Society and John Wiley & Sons, Ltd.

Table 11.1 Three types of sustainability criteria and examples of indicators.

<i>Environmental sustainability</i>	<i>Economic sustainability</i>	<i>Social sustainability</i>	
		<i>Societal level</i>	<i>Individual level</i>
Gas, electricity, and water consumption	Production values	Average lifetime	Individual income level
CO ₂ emissions	Inflation rates	Unemployment rates	Individual health status
Land use	Purchasing power	Service accessibility	
		Public health	

In a similar vein, being surrounded by people helps satisfy one's needs for social relationships. Therefore, a considerable part of individual QoL depends on environmental qualities. This environmentally determined individual QoL is a good sustainability criterion, as environmental, social and economic development can only be considered sustainable if it supports individual QoL. In the previous chapter, Bonnes and colleagues discussed how various characteristics of urban environments may affect individual well-being. Similarly, the QoL approach allows the effects of different environments on individual well-being to be studied, including physical as well as social and economic environments. Moreover, besides 'diagnosing' the effects of existing environments, the QoL measure can be used to assess how environmental changes affect individual QoL. This is important as continuous environmental changes are an inherent part of sustainable development.

In this chapter, we first elaborate on two important dimensions of QoL measures, namely objectivity–subjectivity and unidimensionality–multidimensionality. Next, we discuss how individual QoL measures have been applied in studies on human–environment relationships.

11.2 QoL: OBJECTIVE AND SUBJECTIVE MEASURES

To assess environmentally determined QoL, **objective** and **subjective measures** can be used (see also Chapters 4 and 10). Objective measures describe how well environmental characteristics meet the criteria that are believed to be necessary for a good life. These measures consist of technological measurements and expert judgements of environmental conditions (e.g. quality of tap water, sulfur dioxide in the air), that can be assessed at societal or individual level. Objective measures describe environmental qualities and their presumed effects on QoL, but have certain limitations (see

also Diener, Lucas, Schimmack, & Helliwell, 2009). To set objective criteria, someone (usually experts in the relevant fields) has to decide which life domains are most important to people and what levels of satisfaction with those domains are sufficient to sustain QoL. Although needs and values in life are generally universal, this does not hold for all indicators that are typically included in QoL measures. Also, people differ in how much value they ascribe to various life domains (see Chapter 14) and how satisfying they find different environments. People's QoL also depends on, among other things, individual expectations, values and previous knowledge. Therefore, QoL cannot be derived from objective conditions alone.

To complement objective measures, subjective measures based on individual perceptions are used. Subjective measures allow studying how people appraise environmental characteristics and how well they think environments satisfy their important needs and values (see also Chapter 10). For example, people can report how satisfied they are with their lives with regard to certain circumstances (e.g. Andrews & Withey, 1976; Diener, Emmons, Larsen, & Griffin, 1985), or they can express their positive or negative affect (e.g. Watson, Clark, & Tellegen, 1988) or their optimism or pessimism (e.g. Scheier & Carver, 1985) with regard to various life aspects in their current situation.

To conclude, objective as well as subjective measures can be used to study individual QoL and ideally they should complement each other. Later in this chapter, we focus on subjective QoL measures as they are more relevant for psychology due to their focus on people's experiences and perceptions.

11.3 QoL: UNIDIMENSIONAL AND MULTIDIMENSIONAL MEASURES

Research has primarily focused on studying the effects of specific environmental conditions on specific aspects of QoL. For instance, environmental pollution and noise have been linked to self-reported health (see Chapter 3). **Unidimensional measures of QoL**, describing relationship between one environmental factor and one QoL aspect, can be used for such purposes. For example, one might examine whether individual car use (e.g. weekly mileage) is related to personal freedom (e.g. 'How free or limited do you feel in deciding upon your daily activities?').

However, most often environmental conditions affect multiple aspects of QoL, just like most QoL aspects are influenced by multiple environmental conditions. Consider again individual car use. Car use not only affects one's freedom, but also various other needs and values, such as the need to be independent, to enjoy life and to enhance one's status (see Chapter 16). In a similar vein, freedom is determined not only by the level of car use, but also by other environmental conditions, such as accessibility of natural settings and availability of facilities (e.g. shops, hospitals). To study multiple relationships between environmental factors and QoL, **multidimen-**

sional measures are needed. Multidimensional measures integrate various QoL aspects and allow an assessment to be made of how and to what extent they are influenced by various environmental factors. For example, one can measure satisfaction with various QoL aspects in different environmental settings and examine how differences in environmental factors result in different levels of satisfaction with a range of QoL aspects. This can be done by comparing actual environments as well as hypothetical situations, as we will explain later in this chapter.

11.4 ENVIRONMENT AND QoL: RESEARCH OVERVIEW

Various empirical studies have examined relationships between environmental characteristics and individual QoL. Many of these studies have used a multidimensional instrument for assessing individual QoL (Poortinga, Steg, & Vlek, 2004). This instrument comprises 22 **QoL aspects** selected on the basis of an extensive literature review on needs and values and representing (very) important domains in people's lives (Steg & Gifford, 2005; see Box 11.1). Which specific QoL aspects are studied may slightly vary for different environmental settings. For example, in studies on QoL in residential environments, the aspect *education* has been broadened into *personal development*, and the aspects *accessibility* and *participation in residential decision making* have been added as important factors for QoL in residential environments (Tjoelker, 2011).

In a typical study, individual QoL is studied by asking people how important they think the QoL aspects are and to what extent they are satisfied with the QoL aspects in their current situation, and (or) whether they think their satisfaction would change under different conditions. By doing so, four questions can be answered. First, one can identify which QoL aspects are most important to people. Second, one can assess QoL in specific situations. Third, variations in QoL across different environments can be identified and linked to particular environmental factors. Finally, changes in QoL due to environmental changes can be evaluated. We will elaborate on each of these questions.

Which QoL aspects are most important?

Environmental programmes are not sustainable if they threaten important needs and values of individuals. To avoid that, one should know which QoL aspects are most important to people. Experts might misinterpret the preferences of people (e.g. Fawcett, Ellingham, & Platt, 2008; see also Chapter 9). They tend to overestimate the importance of certain environmental characteristics (e.g. aesthetic and material beauty), while underestimating the importance of other characteristics (e.g. freedom of choice and privacy). The QoL measure needs individuals themselves to rate how

BOX 11.1 DESCRIPTION OF 22 QUALITY OF LIFE (QoL) ASPECTS

Poortinga et al. (2004) have developed a multi-dimensional instrument for assessing individual QoL consisting of 22 QoL aspects. These aspects were selected on the basis of an extensive literature review on needs, values and human well-being in relation to sustainable development (Steg & Gifford, 2005), and are believed to represent (very) important domains in people's lives.

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

important (e.g. from 'not important' to 'very important' on a Likert scale) each QoL aspect is to them. The QoL aspects scoring highest on importance represent the priority needs and values of people, while the QoL aspects with lower importance ratings are less significant for individual QoL. For example, one study showed that Dutch respondents ascribed most importance to health, partner and family, social justice and freedom in their lives, and they ascribed relatively little importance to status/recognition, spirituality/religion and material beauty (Steg & Gifford, 2005). Perlaviciute (2009) studied QoL in residential environments and found that residents evaluated safety, freedom and privacy as the most important QoL aspects. Interestingly, residential factors often prioritised by housing experts, such as comfort and material beauty, were not among the most important QoL aspects for residents.

The relative importance of needs and values may vary across different groups. Indeed, research has shown that Dutch women value personal freedom more than do men, and unmarried persons rate family, health and safety as less important than do married people (see Steg & Gifford, 2005, for a review). Group differences should be considered when developing sustainability policies. Improving certain conditions may enhance QoL for one group but not for other groups.

To what extent is QoL sustained in certain situations?

The QoL measure reveals how well certain conditions meet the needs and values of people, and which QoL aspects should be improved to promote QoL. This is useful for assessing the efficiency of policy making and developing interventions. Respondents can be asked to report to what extent they are satisfied (e.g. from 'very dissatisfied' to 'very satisfied' on a Likert scale) with each QoL aspect in their current situation. Satisfaction judgements for the QoL aspects can be weighted with their importance ratings (explained in the previous section), as satisfaction with more important needs and values is more relevant to QoL than satisfaction with less important QoL aspects. Also, the QoL aspects can be plotted in a **Cartesian plane** according to their importance and satisfaction ratings (Steg et al., 2007; see Figure 11.1). This Cartesian plane indicates which QoL aspects are satisfied and which are aspects are not sufficiently satisfied and require changes. The QoL aspects falling in the top right corner of the Cartesian plane are highly important to people and well satisfied under the given conditions. These are examples of good policy making and require no changes. In the top left corner of the Cartesian plane, there are highly important but poorly satisfied QoL aspects. Urgent interventions are needed with regard to these aspects in order to sustain individual QoL. Satisfaction with less important QoL aspects (bottom part of the Cartesian plane) is less significant to QoL. In case they are poorly satisfied, improvements might be worthwhile but they are not urgent. In a study by Gatersleben (2000), Dutch respondents reported high satisfaction with many important needs and values, especially with their health and comfort. However, reported satisfaction with environmental quality was relatively low, suggesting that Dutch environmental policies and interventions should be improved to better meet this aspect.

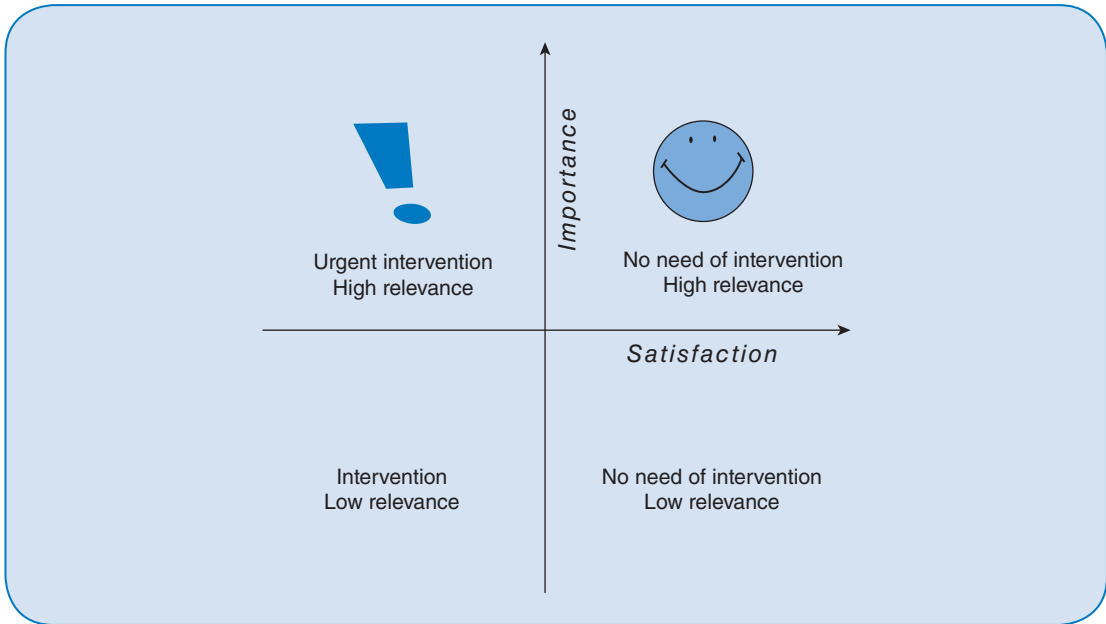


Figure 11.1 Cartesian plane.

How does QoL differ with varying environmental conditions?

In **cross-sectional studies**, QoL can be measured in different environmental settings and observed variations in QoL can be linked to various environmental characteristics in those settings. So far, cross-sectional studies have mostly studied unidimensional QoL, for example, examining objective or subjective health across more versus less green environments (see Chapter 6) or measuring experienced stress across contexts differing in noise and crowding (see Chapter 3). Satisfaction with multiple QoL aspects was studied in a middle-size Dutch city (Perlaviciute, 2009) and a small Dutch village (Tjoelker, 2011). In both settings, residential characteristics turned out to satisfy many important needs and values of people. City residents, however, reported relatively poor satisfaction with nature and environmental quality which was not the case in the (greener) village. Village residents reported relatively low satisfaction with personal development and participation in residential decision making. This is probably related to the limited social and political life in the sample village.

A disadvantage of cross-sectional studies is the lack of control over confounding factors such as social-economic characteristics (see also Chapter 3). Therefore it is necessary to also conduct experiments in which participants are randomly assigned to different environmental settings. We elaborate more on this in the following section.

How do environmental transformations influence QoL?

Sustainability programmes and interventions usually transform people's environments. It is important to clarify, among other things, how these transformations affect individual QoL. For that purpose, one can measure people's satisfaction with the QoL aspects before and after the intervention, and ideally, compare experimental groups with a control group. Steg and colleagues (as cited in Steg & Gifford, 2005) found that after an energy-saving intervention which required behaviour changes, participants reported higher satisfaction with environmental quality and nature than before the intervention, while satisfaction with the other QoL aspects did not change.

It is also useful to know how people evaluate interventions that are being planned but not yet implemented. Here, respondents are presented with scenarios of future interventions and asked how these would affect their satisfaction with the QoL aspects and their overall QoL (e.g. from 'would decrease dramatically' to 'would increase dramatically' on a Likert scale). Studies on anticipated effects of environmental programmes typically found that people express mixed positive (e.g. increased satisfaction with environmental qualities) and negative (e.g. decreased satisfaction with comfort) effects on their QoL (see Box 11.2; see Steg & Gifford, 2005, for a review). Perlaviciute (2009) examined how higher level of participation in residential decision making would affect QoL. She found that Dutch respondents expected to be more satisfied with participation-relevant QoL aspects, namely social justice, freedom and identity/self-respect, but also with other QoL aspects, including safety, privacy, leisure time and accessibility.

People's expectations about future events might differ from their actual experiences of those events. For example, people might be sceptical towards future environmental interventions and expect only reduced comfort and increased expenses.

BOX 11.2 EFFECTS OF ENVIRONMENTAL SUSTAINABILITY PROGRAMMES ON QoL

De Groot and Steg (2006) studied the potential effects of doubling the costs of car use on QoL. Respondents expected negative changes in comfort, money/income, freedom, change/variation, leisure time and work, while they expected positive changes in environmental quality, nature/biodiversity and safety (see Figure 11.2). Interestingly, only a minor decrease in overall QoL was expected. Apparently, reductions in some QoL aspects were compensated for by improvements in other aspects. Therefore,

even such stringent environmental interventions might be publicly accepted if not only negative, but also positive outcomes are expected. When knowing for which QoL aspects people expected strongest negative effects, additional interventions can be developed to enhance these QoL aspects. For example, people expected strongest negative effects on comfort if costs of car use were doubled, which can be reduced by making other transport modes more comfortable.

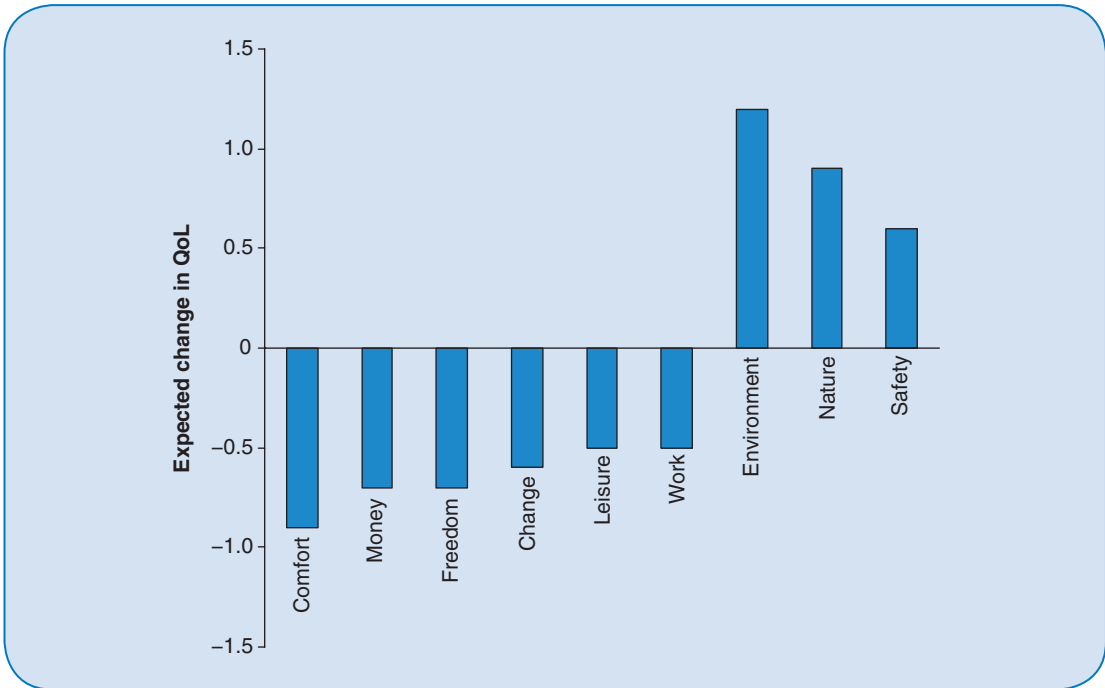


Figure 11.2 Expected changes in QoL aspects if costs for car use were doubled ($N = 490$). Responses were given on a 7-point scale ranging from -3 'would decrease dramatically' to 3 'would increase dramatically'. Adapted from De Groot and Steg (2006).

But after the interventions have taken place, they tend to report more positive changes in QoL than expected beforehand (e.g. better environmental quality: see also Chapter 24). This discrepancy might be caused by cognitive biases in **affective forecasting** and by a psychological phenomenon called **hedonic treadmill**. Regarding affective forecasting, people tend to be biased when forecasting emotions caused by future events. They overestimate how long emotional effects will last (Wilson, Wheatley, Meyers, Gilbert, & Axson, 2000), or perceive future events as more pleasant (or unpleasant) than they actually are (Gilbert & Wilson, 2000). Hedonic treadmill refers to the fact that people adapt to changing circumstances and report similar levels of well-being to what it was before the changes took place (Diener, Lucas, & Scollon, 2009). For example, after a while, lottery winners are not particularly happier than before, and people with impaired motor or sensory functions are not as unhappy as expected beforehand (Brickman, Coates, & Janoff-Bulman, 1978).

People's biased perceptions of future interventions shape public acceptance of these interventions. When knowing people's greatest concerns, policy makers can apply strategies to reduce these concerns (e.g. by providing information, or involving people in decision making) and thus diminish public resistance to the implementation of interventions.

11.5 SUMMARY

We presented a QoL measure to study individual perceptions of sustainable development. QoL reflects to what extent important needs and values are satisfied. Individual QoL can be measured objectively (observable environmental characteristics) or subjectively (people's perceptions of environmental characteristics). QoL measures can be unidimensional (relationship between a specific environmental factor and a specific QoL aspect) or multidimensional (relationship between multiple environmental factors and multiple QoL aspects). Measuring individual QoL serves four basic functions: identifying people's most important needs and values, assessing environmentally determined QoL, studying variations in QoL across different environments and evaluating effects of environmental transformations on QoL. Empirical studies have been carried out for each of these functions shedding more light on how, to what extent and in which domains environmental characteristics affect individual QoL. These findings draw basic guidelines for moving towards sustainable human–environment relationships.

GLOSSARY

- affective forecasting** Predictions of one's affect in the future.
- Cartesian plane** A coordinate system in which the QoL aspects can be plotted according to their importance and satisfaction ratings.
- cross-sectional study** A descriptive study which aims to describe the relationship (correlational rather than causal) between the measures of interest and other factors in a given population at a particular time.
- economic sustainability** The extent to which welfare in a society remains sufficient over time.
- environmental sustainability** The extent to which biological systems remain diverse and productive over time.
- hedonic treadmill** People's tendency to adapt to improving or deteriorating circumstances to the point that these circumstances do not significantly affect their perceived QoL.
- multidimensional measures of QoL** Indicators of multiple relationships between various environmental factors and various QoL aspects.
- objective measures** QoL measures based on technological instruments or expert evaluations of environmental characteristics.
- QoL aspects** Aspects that significantly contribute to individual well-being, such as family, social relations and freedom.
- quality of life (QoL)** A psychological construct indicating the extent to which important needs and values of people are fulfilled.
- social sustainability** The extent to which societal and individual psycho-social needs remain satisfied over time.
- subjective measures** QoL measures based on individual perceptions of how well environmental characteristics satisfy one's important needs and values.

sustainability Well-balanced human–environment relationships; an optimal balance between environmental, social, and economic qualities.

unidimensional measures of QoL Indicators of the relationship between a particular environmental factor and a specific QoL aspect.

SUGGESTIONS FOR FURTHER READING

Diener, E., & Diener, R. B. (2008). *Happiness: Unlocking the mysteries of psychological wealth*. Malden: Blackwell Publishing.

Eid, M., & Larsen, R. J. (Eds.) (2008). *The science of subjective well-being*. New York: Guilford Press.

Kahneman, D., Diener, E., & Schwarz, N. (Eds.) (1999). *Well-being: The foundations of hedonic psychology*. New York: Russel Sage Foundation.

REVIEW QUESTIONS

1. Explain the concept of sustainable development.
2. List one advantage and one disadvantage of subjective QoL measures.
3. Describe the difference between unidimensional and multidimensional QoL measures.
4. Explain briefly the four functions of measuring QoL.