

Review of Lifestyle Research relevant to Alpine Regions

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Summary

The humans' way of life is causing devastating environmental changes impacting all living beings and the geophysical processes of the planet (Anthropocene). Hence, humans shall rethink their way of life. At the individual level, this concerns foremost nutrition, housing and mobility as these areas are responsible for the greatest adverse environmental impacts by individual behaviour in the western world. Consequently, the investigation of sustainable lifestyles, particularly in these areas, is an appropriate point of departure in order to foster sustainable ways of life.

As regions hosting sensitive ecosystems such as the Alpine region are heavily affected by environmental changes it is obvious to develop strategies to change lifestyles in the Alps. As a consequence, the population may be perceptive to questions of lifestyle and environmental protection, and hence environmental impacts may be reduced.

This report is part of the research project "Sustainable lifestyles in the Alps" of CIPRA (Commission Internationale pour la Protection des Alpes) and is developed on behalf of CIPRA. The aim of the overall research project is to investigate and develop sustainable lifestyle models in order to better take up lifestyle questions and models in three main strategies concerning the Alps: Alpine convention, EUSALP and Alpine Space Programme. The present study concerns Work package AP1: theoretical framework, investigation of literature on lifestyle, and collection of some relevant data of these areas.

Different lifestyle concepts can be used as basis to develop lifestyle models for the Alpine population. The present report describes the term of lifestyle and the factors which impact on it (Chapter 2.1 and 2.2). Furthermore, it entails a collection of lifestyle concepts (Chapter 2.3 and 2.4). Also, an overview on socio-economic data for the Alpine region is presented (Chapter 3). The data may be relevant to consider when developing lifestyle models.

The methods used are desk research and statistical data search.

The Alpine region comprises parts of eight countries with a total amount of approximately 14 million people (following the Alpine Convention perimeter). Though the population shares the fact living in the Alps, they differ strongly inter alia in terms of cultural background and spatial conditions.

The review of lifestyle literature (see Chapter 2.1 and 2.2) showed that there are social and psychological factors which influence lifestyles. The most important seem to be the following: (1) perception of individual responsibility; (2) habits and their changeability (trigger for change, pace of change); (3) capacity of self-reflection; (4) experience with nature; (5) social recognition of environmentally conscious behavior. Besides, there exist factors within the political and economic realm which have an impact on lifestyles: (1) institutional and legal framework; (2) advertisement; (3) default setting.

There are two types of lifestyle concepts which are discussed in Chapter 2.3 and 2.4. Firstly, the consumption and marketing orientated concepts, e.g. the Sinus-Milieus, the Roper consumer styles, Mosaic or Housing Trends 2030. The Sinus-Milieus summarize people into groups following their view of life, values and social situation. The purpose of the concept is to illustrate socio-cultural diversity in society and to enable an understanding of the motivation of human actions. The Roper consumer styles are conceptually similar to the Sinus-Milieus. Their main objective is to position new brands, develop new products and identify upcoming trends. Mosaic is a more spatial approach with the aim to understand demographics, lifestyles, consumer behaviour as well as the location of individuals and households by clustering individuals, households or postcodes in a country into homogenous lifestyle types. Housing Trends 2030 focuses on the housing industry and provides information to meet specific housing industrial needs. This approach groups people according to their housing preferences and demands.

Secondly, there exist several sustainable lifestyle approaches: the general typology of environmental behaviour, the forms of environmental conscious behaviour, the energy consumption of US-citizens, the WELSKO-Typology, the ISOE-Types of mobility, and the environmental awareness approach used in Germany. These approaches will be briefly presented: the general typology of environmental behaviour aims to protect and improve the environment by increasing the participation of individuals and the community. Therefore, different population segments are identified with various abilities to act and willingness to act. The environmental conscious behaviour approach seeks to decrypt the overarching context of conditions of complex mentalities. Five types of behaviour with corresponding conditions are described. The study “Energy consumption of US-citizens” provides results on energy consumption and CO₂-emissions of different income classes, lifestyle groups and forms of housing. The WELSKO-Typology groups people of two German cities according to their energy-saving attitude. The typology helps to develop targeted marketing strategies for an energy service company. The ISEO-Types of mobility identifies different mobility types in two German cities and aims at supporting the development of communication strategies with the aim to transform the mobility behaviour. The milieu concept, developed by Sociodimensions, is used in the study “Environmental awareness in Germany 2014”. The concept is comparable to the Sinus-Milieus. Additionally, the study allocates different environmental types to the milieus according to Sociodimensions. The study is an annually released report, investigating the German population and their attitude towards environmental topics.

Socio-economic aspects impact strongly on living standards and lifestyles. Therefore, Chapter 3 summarizes socio-economic data which is available on a NUTS 2 level for the Alpine area and easily accessible: population density, population aging and gender distribution; employment by economic sector; net income per capita; gross domestic product per capita; urban sprawl and accessibility.

The socio-economic data reveals the following which might be relevant for lifestyle and environmental impact and the development of lifestyle models to consider in Alpine strategies: (1) there is an aging population in the Alpine territory; (2) the Alpine population works primarily in the service sector; (3) the net income per capita is uniformly distributed over the Alpine territory, except for the regions in Liechtenstein and Switzerland, where the level of net income exceeds that of the other regions; (4) the gross domestic product is relatively even distributed over the entire Alpine region; (5) the degree of urban sprawl and accessibility vary across the Alpine regions.

Concluding this research, we recognize that in order to change lifestyles, the peoples’ expectations and practices of life would have to be a starting point. Such expectations concern for instance the kind of housing and extent of living space, the daily and exceptional travel distances considered as normal, or the recognition of resource and land scarcities to adapt to.

Overall, the research on (sustainable) lifestyles is insightful as it hints at areas and groups of population to address with lifestyle change approaches and the suitability of different approaches. However, when it comes to concrete approaches and measures to propose, we recommend to investigate the specific life conditions of the population as these conditions vary considerably and may differ in importance in the daily life of people.

1. Introduction

Resource exploitation and overstretching deposits are threatening the environment and society. This is triggered and boosted by megatrends such as economic globalisation, digitalisation, socio-demographic changes and increasing mobility. The capacity for mitigation (e.g. measures to reduce emissions or enhance greenhouse gas sinking systems) and adaptation (e.g. process of adjustment to actual or expected climate change and its impacts) depends strongly on humans, their lifestyles, behaviour and culture (IPPC, 2014).

Regarding human activities, the following consumption and production sectors cause the greatest impacts on the environment: nutrition, living and mobility. The environmental impacts of these sectors are results of values, lifestyles, social structures, market mechanisms, technologies, products and infrastructures (Bundesamt für Umwelt BAFU, (2018); IPPC (2014). Hence, developing strategies to foster sustainable lifestyles is of great importance for mitigating and adapting to climate change and other environmental problems.

The discussion about lifestyles was introduced by George Simmel and Max Weber in the early 20th century. Pierre Bourdieu came up with the model of social milieus in the 1980^{ies} (Lütke, 1989). It was Lütke who defined the term “lifestyle” more precisely (see Chapter 2.1). His definition is one of the most often used and cited and it sets up the basis for the development of many different lifestyle concepts. Some of them serve the consumption and marketing research (e.g. Sinus-Milieus) while others illustrate different sustainable lifestyle types (e.g. WELSKO-Typology). Hence, some of these concepts are more suitable to investigate and foster sustainable lifestyles. Whether a concept suits or not depends inter alia on the geographical area it is applied to.

The Alpine region is the area of interest in this report. It covers eight countries or parts of them: Germany, France, Italy, Liechtenstein, Monaco, Austria, Slovenia and Switzerland (Ständiges Sekretariat der Alpenkonvention, 2015). In order to protect the unique Alpine landscape and to ensure the living conditions in the Alps, hence foster mitigation and adaptation, lifestyles of the Alpine residents need to be challenged. This requires demographic and socio-economic information about the composition of the Alpine population. The latter is very heterogeneous, due to the wide range of countries belonging to the Alpine region. Hence, lifestyles differ and different approaches to foster and change them need to be conceived.

The overall objective of the present report is to provide basic knowledge about lifestyles and its different concepts as well as data for the Alpine region in order to support research regarding Alpine lifestyles. The report consists of literature research and data analysis. It outlines factors influencing lifestyles from a psychological, political and economic perspective (see Chapter 2.2). Furthermore, it provides a collection of lifestyle concepts potentially applicable to the Alps; four general lifestyle approaches and six sustainable lifestyle approaches are introduced in Chapter 2.3 and 2.4. In Chapter 3.1 selected demographic and socio-economic data is presented on a NUTS 2 level (regional level) and this covers the following topics: (1) employment by economic sector; (2) net income per capita; (3) gross domestic product per capita; (4) urban sprawl and accessibility. This data analysis forms the basis for suggestions to change lifestyles in the Alps (see Chapter 3.2). The appendix provides further data on a NUTS 2 level, which is not part of the actual report due only partial data for some of the NUTS 2 regions considered.

2. Lifestyle and lifestyle research

2.1 Overall concepts

The term “lifestyle” can be understood in different ways. There is no uniform definition or operationalisation. The way of life refers to social and cultural norms, which are expressed in daily life. Lifestyles are differentiations of the way of life. The two sociologists George Simmel and Max Weber were the first to introduce the lifestyle term back in the early 20th century (Degenhardt, 2006).

According to Lüdtke (1989), who summarized the roots of the term lifestyle, Georg Simmel defined “lifestyle” around 1900 as the expression of a lifestyle design, which is individual but which can be characterised objectively. In the early 20th century Max Weber explained the way of living as the typical way of consumption as well as a claim for honour and social acknowledgement by a certain group (status group or occupational category). Around 1985, the French sociologist Pierre Bourdieu stated that lifestyles are the result of the social milieu and the acting of people. Lifestyles are recognized by attributes.

Lüdtke describes “lifestyle”

... as distinctive structure and form of a subjective reasonable, proven (i.e. unavoidably adopted, habitualized or tested) context of the life organisation (with the components: goals, motivations, symbols, partner, behavioural patterns) of a private household (single, residential group, family), which the household shares with a collective and whose members therefore perceive and rate each other as socially similar (Hartmut Lüdtke, 1989, S. 40, translation by the author).¹

According to Scholl & Hage (2004) lifestyle research deals with the individual whereas “social milieu” research considers groups, more accurately the relationships between individuals, social institutions and spatial structures. This social milieu approach is a class model, which primarily differentiates income, profession, education etc. (on the vertical axis). To this, lifestyle concepts add a sociocultural dimension (horizontal axis) and show taste preferences, product- and leisure time affinities, political attitudes etc. The distinction between preferences is especially useful for marketing and consumption research. The most popular typology of this fusion of social milieu and lifestyle in Europe is the Sinus-Milieu typology (see Chapter 2.3.1).

Part of the lifestyle is consumption which is a sociocultural process with three functions: (1) presentation of personality and taste; (2) documentation of the social situation; (3) documentation of group belonging.

Reusswig (2002) developed a lifestyle concept with three dimensions, comprehensibly explained by Scholl & Hage (2004): (1) performance (practices, behavioural patterns, consumption, equipment); (2) mentality (attitude, values, goals, world views); (3) situation (education, income, professional prestige). These dimensions consist of constitutive and descriptive variables (latter indicated in brackets above). This lifestyle concept forms the basis for many further lifestyle concepts.

Kleinhüchelkotten (2005) points out that besides the more consumption orientated approaches, such as the one of Reusswig, there exist also concepts of lifestyle focusing on ecological lifestyles. Often these concepts deal with specific attitudes and behavioural aspects, e.g. energy consumption or mobility. The attitude and behaviour in these concrete sectors form the basis for the construction of different specific behavioural types. Therefore, these more ecologically focused approaches only represent the behaviour of particular

¹Original text: *Lebensstil lässt sich definieren als: unverwechselbare Struktur und Form eines subjektiv sinnvollen, erprobten (d.h. zwangsläufig angeeigneten, habitualisierten oder bewährten) Kontextes der Lebensorganisation (mit den Komponenten: Ziele, Motivationen, Symbole, Partner, Verhaltensmuster) eines privaten Haushalts (Alleinstehende/r, Wohngruppe, Familie), den dieser mit einem Kollektiv teilt und dessen Mitglieder deswegen einander als sozial ähnlich wahrnehmen und bewerten.*

sectors or topics, e.g. the overall consumption patterns or the general attitude towards the environment. However, there are a few ecological behaviour concepts which also consider personal values while developing lifestyle or behavioural typologies and hence, are applicable to a broader range of behavioural sectors/topics. In contrast to the sector specific ecologically oriented approaches (e.g. mobility or energy consumption typology) the marketing and consumption-oriented approaches allow conclusions to be drawn about ecological behaviour in many different areas, even if the focus of these latter concepts is not primarily on investigating concrete ecological actions.

Regarding ecological lifestyles, it is often mentioned in literature that in reality patchwork lifestyles dominate because one single ecological lifestyle does not exist. Patchwork lifestyles take account of different patterns of values, ways of life and attitudes which together form a lifestyle. Many of these patterns though not all could be described as ecological (Reusswig, 1994).

Helmke et al. (2016) discuss one of the currently popular and spreading ecological lifestyle, called LOHAS, the **Lifestyle Of Health And Sustainability**. People living this way of life want to foster their health and sustainability through specific product selection and consumption behaviour. They are consuming consciously and want to bear responsibility for social and ecological living conditions without abandoning consumption. In Germany approximately 20% of the population lives the LOHAS.

2.2 Lifestyles and ecological conscious behaviour

What are the factors which influence the lifestyle and ecological conscious behaviour? This Chapter describes influencing factors from the following different perspectives: psychology, politics and economy.

2.2.1 Psychological dimensions of lifestyle research

This Chapter first outlines characteristics and experiences which support the development of ecological conscious lifestyles. It further describes the norm-activation-model with whom the different steps of human acting can be described theoretically. Obstacles in the development of an ecological conscious lifestyle are illustrated. Finally, different psychological factors which have an influence on ecological conscious lifestyles are listed.

Several personal characteristics and experiences which foster ecological conscious lifestyles were identified by Degenhardt (2006) in his examination of ecological conscious lifestyles. A selection of these characteristics and experiences is the following: authenticity; conscience; personal responsibility; systematic and reflexive thinking; consternation as expression of concerns about oneself and others; experiences with nature; ecological conscious parents; distant relation to consumption; education; solidarity with the social environment.

The theoretical background of ecological conscious acting can be analysed with the norm-activation-model according to Shalom H. Schwartz who created this model in 1977. The model refers to responsible behaviour and is applicable to the socio-scientific environmental science (Hunecke, 2001). Hunecke (2001) describes four phases of norm-activation in relation to ecological conscious acting: (1) activation: perception of problem; (2) obligation: activation of personal norm; (3) defence: responsibility denial; (4) reaction: either taking action or not taking action.

The discrepancy between attitude and behaviour of individuals is an often discussed phenomenon in the psychological research field of ecological conscious behaviour (Degenhardt, 2006). Degenhardt (2006) refers to different explanations for this so-called mind-behaviour-gap: (1) contradictory social contexts, such as the overall economic aim of growth, which does not match with an ecological way of life; (2) relying on regulatory systems due to the feeling of helplessness, meaning the responsibility delegation to authorities; (3) competing individual interests and motivations, meaning for example to travel with planes

during holiday; (4) routinized action sequences; (5) missing social confirmation, meaning exemplary that nobody praises someone who throws the plastic bottle into the PET-bin instead of the normal bin; (6) maximisation of utility; (7) missing incentives to foster environmental friendly behaviour.

Helmke et al. (2016) identify two major obstacles on the way to ecological conscious lifestyles, namely the change of habits and the freedom of consumption. These obstacles, coupled to the reasons for the mind-behaviour gap (see above), are, according to Helmke et al. (2016), inter alia the following: (1) doubts about the usefulness of ecological consumption due to the difficulties to prove that the purchase of e.g. organic products has the positive ecological effects it is supposed to have; (2) the lack of self-reflection which prevents the necessary step to take responsibility for the actions of a person (Helmke et al., 2016).

To summarize, the following list of factors discussed in the cited literature seems to be of particular relevance to determine an environmentally aware lifestyle:

- Perception of individual responsibility
- Habits and their changeability (trigger, pace)
- Capacity of self-reflection
- Experience with nature
- Social recognition of environmentally conscious behaviour

2.2.2 Political and economic dimensions of lifestyle research

The following Chapter points out different promotional as well as inhibitory factors which influence ecological conscious lifestyles. Several instruments fostering environmental friendly consumption are introduced. Furthermore, the default setting is explained, followed by a list of factors primarily impacting lifestyles.

A study by Leng et al. (2016) investigated the components of an ecological conscious lifestyle. On a political and economic level, the study reveals inter alia factors, which co-determine the environmentally conscious lifestyle in different areas (e.g. transport, governance, employment, consumption, economics). Leng et al. (2016) differentiate between promotional and inhibitory factors regarding ecological conscious lifestyles. Promotional factors are inter alia: (1) good institutional and legal framework conditions (democratic system, freedom of expression etc.); (2) well developed mobility sector; (3) supermarkets offering a broad range of organic and fair trade products. Inhibitory factors are amongst others: (1) job constraints (e.g. car needed to reach workplace, service trips with planes etc.); (2) power of advertisement; (3) politics determining economy.

Psychologists Kaufmann-Hayoz et al. (2011) have collected several instruments which foster ecological conscious behaviour in consumption and grouped them in four groups: (1) regulative instruments which comprise commandments and prohibitions, e.g. regulations for building owners in the field of energetic refurbishment; (2) cooperative instruments which rely on the self-regulation of social actors, often in the form of agreements between political stakeholders or the self-commitment of branches, e.g. smart metering to increase the energy efficiency in households; (3) economic instruments (price signals) which try to change the individual assessment of acting options, e.g. subsidies or taxes; (4) communication instruments which pursue the goal to change the psychological factors knowledge, values, attitudes and perception of the physical and social reality. Communication instruments create intentions through an appeal to the mentioned factors. An example would be energy consulting services.

Default setting is a socio-economic approach to influence lifestyles (e.g. Sunstein & Reisch (2013)). Defaults are pre-settings/standards that apply automatically to everyone who does not actively deviate from them. Regarding sustainability, the setup of green defaults can have highly positive effects on the

environment. Sunstein & Reisch (2013) illustrate the default-concept inter alia by the example of paper consumption: changing the printer default from “one-sided” to “two-sided” (from “grey” to “green”) in order to reduce paper consumption in a company is much easier and less time consuming than spreading information about how one could protect the environment by using less paper. There are other examples, such as setting the default to green (e.g. green electricity) instead of grey (industrial) energy regarding the energy purchase.

Sunstein & Reisch (2013) argue that three factors are responsible for the great impact of setting “green” defaults; (1) implicit recommendation and support of the people who set the default rules. People trust in the default, no matter which one - green or grey – because they believe that intelligent people set this particular default for good reasons; (2) inertia and procrastination foster the default because changing it requires an active decision for the green or grey option. Many people simply keep the default to avoid greater efforts; (3) point of reference and loss aversion: default rules are an important point of reference for decisions and they determine what people assess as loss and profit.

Overall and concluding, with respect to the impact on lifestyle important factors seem to be:

- Institutional and legal framework
- Infrastructure
- Default setting

Furthermore, Kaufmann-Hayoz et al. (2011) demonstrated that there is a broad array of instruments to guide an influence lifestyle and consumption.

2.3 General lifestyle approaches and concepts

There exist different approaches and concepts identifying different lifestyles in consumer and marketing research. They are important for the examination of ecological conscious lifestyles (see Chapter 2.1). General approaches profit from their actuality and therefore their capability to show transformations. The following Chapters introduce four popular consumer- and marketing-concepts of lifestyle research.

2.3.1 Sinus-Milieus

The Sinus-Milieus are developed by the Sinus Institute, which is conducting psychological and socio-scientific research and consulting. The milieus are a typology of society and target groups in which the people are summarized into peer groups by views of life, values and social situation. The objective of the concept is to provide a realistic picture of socio-cultural diversity in society. Furthermore, the concept enables an understanding why people act in a particular way and how their behaviour can be influenced. Through this concept people are perceived holistically and in relation to what is important to them (Sinus Markt- und Sozialforschung GmbH, 2018).

Nowadays there are about 18 European countries where a Sinus-Milieu segmentation exists for. The milieus are developed for every country individually. They are kept up to date to make sure that the information about the actual socio-demographic situation of a country is available (Da Silva Wagner & Bug, 2015). The data for the specific nations as well as the concrete milieu composition is hard to get, therefore the well-documented model of Germany will serve as illustration of the Sinus-Milieu concept.

The method of the Sinus Institute is very realistic because there is no clear demarcation between the milieus. They are rather overlapping and therefore closer to reality than if the milieus would be clearly dissociated from each other (ibid.).

The basis for the development of the milieus are standardised interviews with about 50 000 participants being interviewed per survey period. Public, political or industrial institutions are often the customers of such the survey data (Helmke et al., 2016).

Figure 1 shows the concept and its milieus in Germany in 2018. There are two axes spanning a two-dimensional room. The vertical axis illustrates the social status, the horizontal one represents the degree of modernization. For 2018 ten milieus for Germany were identified, each one is indicated with its share of the German population (Da Silva Wagner & Bug, 2015).

For a closer description of the different Sinus-Milieus see table 1.

The Sinus-Milieus® in Germany 2018

Social Status and Basic Orientation

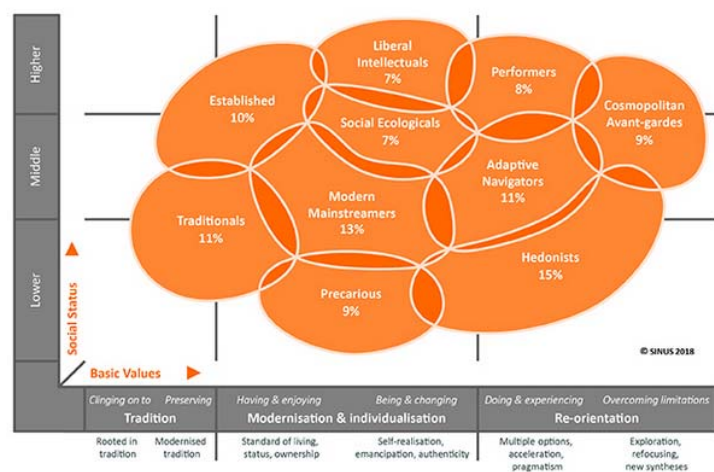


Figure 1: Sinus-Milieus in Germany 2018 (Source: <https://www.sinus-institut.de/en/sinus-solutions/sinus-milieus/>)

Table 1: Typology of the Sinus-Milieus (according to Bodo Flaig & Tautscher, 2018, p. 16). The remarks in brackets refer to the milieus' social status.

Milieu	Characteristics
Established (upper class)	The Establishment in the classic sense: a responsibility and success ethic; aspirations of exclusivity and leadership along with a sense of status; growing desire for order and balance
Liberal Intellectuals (upper class)	The enlightened educational elite: discerning view of the world, a fundamentally liberal outlook and post material roots; desire for self-determination and personal development
Performers (upper class)	The multi-optional, efficiency-oriented top performers: a global economic mind-set; self-image as avant-garde when it comes to consumption and style; very technically and IT minded; establishment tendencies, erosion of visionary verve
Cosmopolitan Avant-gardes (upper class)	The ambitious, creative avant-garde: transnational trendsetters – mentally, culturally and geographically mobile; networked both on- and offline; non-conformist, seeking new frontiers and new solutions
Modern Mainstreamers (middle class)	Mainstream civil society with the will to achieve and adapt: general proponents of the social order; desire to become established at a professional and social level, seeking to lead a secure and harmonious existence; a growing sense of being out of their depth, fear of social demotion
Adaptive Navigators (middle class)	The modern young centre of society with a markedly pragmatic outlook on life and sense of expedience: motivated and prepared to adapt, but also keen to have fun and be entertained; ambitious, flexible, cosmopolitan – at the same time a strong need for social ties and a sense of belonging
Social Ecologicals (middle class)	Socially engaged and socio-critical milieu with normative notions of the 'right' way to live: a pronounced ecological and social conscience; globalization sceptics, upholders of political correctness and diversity (multi-culti)
Traditionals (lower-middle/lower class)	The security- and order-loving older generation: rooted in the world of the petty bourgeoisie or the traditional blue-collar culture; exercising thrift and adapting where necessary; growing resignation and an ever-greater sense of being left behind
Precarious (lower-middle/lower class)	The lower class in search of orientation and social inclusion ("belonging"): desire to keep up with the consumer standards of the broad middle classes – but faced with ever more social disadvantages, a sense of exclusion, embitterment and resentment
Hedonists (lower-middle/lower class)	The fun and experience/adventure-oriented modern lower class/low-middle class: living in the here and now, carefree and spontaneous; often conformist at work but choosing to break free from the shackles of everyday routine in their free time

The Geo-Milieus are another attempt of the Sinus Institute to classify the population into different types. In order to realize a psycho-geographic target model the Sinus Institute works together with the company Microm which is specialized in sociodemographic and spatial data collection. For the application at a local level the Sinus-Milieus are linked to the Microm data. Through the projection of the milieu target groups to existing customer address lists as well as user-defined areas the Sinus-Milieus are transferred into a micro-geographical segmentation. The Geo-Milieus already exist for Germany, Austria and Switzerland.

The primary objective of this approach is to enable strategic marketing, to acquire new customers, to plan locations and branch networks etc. Figure 2 shows an exemplary map section of Hamburg-Blankenese, Germany. The dots next to the streets represent the different houses, the different colours indicate the corresponding lifestyle of the inhabitants (Sinus Markt- und Sozialforschung GmbH, 2018).



Figure 2: Sinus-Geo-Milieus (Source: <https://www.sinus-institut.de/en/sinus-solutions/sinus-geo-milieus/>)

The Meta-Sinus-Milieus are a further concept which compares groups of like-minded people beyond national borders. There are 15 European countries where Meta-Milieus do exist for: Germany, Austria, Switzerland, France, United Kingdom, Italy, Spain, Russia, Poland, Hungary, Slovenia, Croatia, Bulgaria, Czech Republic, Slovakia (Bodo Flaig & Tautscher, 2018). The Meta-Milieus are available for 44 countries worldwide. For a broad overview over these different countries see Figure 3. The data basis for these Sinus-Meta-Milieus are the TGI (target group index) media data international which is a collection of consumption- and media-behaviour data embedded in the Sinus-Milieus (ibid.).

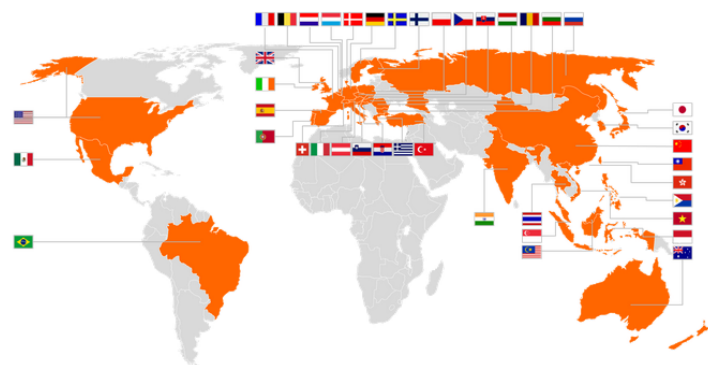


Figure 3: Countries where Sinus-Meta-Milieus do exist for (Source: <https://www.sinus-institut.de/sinus-loesungen/sinus-meta-milieus-weltweit/>)

The Sinus-Milieus are very useful for companies to identify their target groups because they include many aspects of daily life and routines. Depending on the company and its objective more detailed milieus are required but in general the Sinus-Milieus are very useful to segment a company's consumers. The model is easily understandable and applicable (Da Silva Wagner & Bug, 2015). One disadvantage from a scientific perspective is the lack of transparency how milieus are identified and delineated. Nevertheless, the great amount of available representative data differentiated by milieus is very supportive for the research on lifestyles and consumer behaviour (Kleinhückelkotten, 2011).

2.3.2 Roper consumer styles

The GfK (“growth from knowledge”) group developed the Roper consumer styles. Similar to the Sinus-Milieus, the Roper consumer styles are based on interviews which are conducted in over 25 countries every year. In each country 1 000 to 1 500 persons participate in the interviews. The main objective of the study and the resulting typology is to position new brands, to plan the development of new products and to identify upcoming trends (Fleig, 2016). Da Silva Wagner & Bug, (2015) introduce the eight consumer styles in the Roper consumer styles model (see Figure 4 (GfK AG, 2007)). The styles are distributed over four different types of needs and associated value orientations at each side of the square: (1) need: to live a passionate life; (2) need: peace and security; (3) need: to have; (4) need: to be.

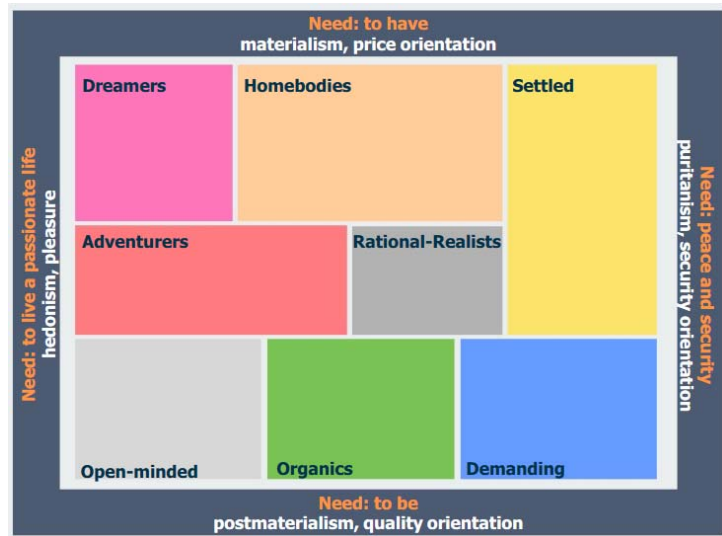


Figure 4: Roper consumer styles (Source: <https://www.scribd.com/document/149339174/Presentation-Roper-Consumer-Styles>)

A detailed overview regarding the different types is provided in table 2. For every consumer style the consumer behaviour and the preferred brands are listed. This additional information about the brand preference is of big importance for the development of marketing strategies.

Table 2: Typology of the Roper consumer styles (according to AZ Direct AG et al., 2017, p. 19-26)

Segment	Characteristics
Dreamers	Young, intuitional, materialistic, dreaming of a world full of celebrities for which they strive for Core values: appearance, individuality, wealth, romantic, power, reputation → Consumer behaviour: brands with strong image → Brands: McDonalds, H&M
Homebodies	Dream of easier and uncomplicated life, feel responsible to fulfil the obligation of their family, society and the state, pleasure and amusement also important → Consumer behaviour: products that give them safety and social acceptance → Brands: Gillette, Ford, Heineken
Settled	Elderly people, enjoying retirements to the fullest Core values: traditions, respect of the ancestors, peace, harmony, thriftiness → Consumer behaviour: products aligned with family, health and safety → Brands: HUG, Vier Waldstättersee
Adventures	Young, dynamic, searching for success and material independence, trend-setters Core values: adventure, personal interests, individuality → Consumer behaviour: technical or provocative products → MTV, ebay, Nike
Rational-Realists	Sophisticated couples with critical but dedicated view, seek for a future that is worth living for, have a fulfilling job, be in accordance with nature, ambitious, eager for knowledge → Consumer behaviour: informative products to be able to compare and optimize

	with other products → Brands: BMW, HP
Open-Minded	Hedonistic intellectuals searching for individuality and personal harmony, tolerant, outgoing, strong need for beauty, individual fulfilment, creativity Core values: tension, internationality, variety → Consumer behaviour: upmarket lifestyle and aesthetic products → Brands: Apple, Shiseido, VISA
Organic	Responsibility for environment and society, social tolerant, lifestyle is consistent with nature Core values: beauty, internationality, amusement, protecting environment, developing own personality → Consumer behaviour: Rational consumption style, orientated on high quality and sustainability → Brands: National Geographic, Discovery, Mobility
Demanding	Traditional orientation, disciplined personality, dutiful and civilized mode of behaviour, enriching themselves in an intellectual way → Consumer behaviour: high quality products; rational buying → Brands: NZZ, American Express, Nestle

The Roper consumer styles are very similar to the Euro-Socio-Styles, another segmentation method developed by the GfK group (Da Silva Wagner & Bug, 2015). This report focuses primarily on the Roper consumer styles and mentions the Euro-Socio-Styles just as basis for the more often used Roper concept, as there is very few literature about the Euro-Socio-Styles.

The Roper consumer styles distinguish clearly between the different groups; the styles do not overlap. This fact weakens the concepts' relation to reality and therefore the credibility of the model. Some social groups are even excluded, although they are part of society. On the other hand, the model can be very useful for companies which require a detailed profile of their target groups (ibid.).

2.3.3 Mosaic

The consumer classification Mosaic, in Europe mainly used in the United Kingdom, works with a four-staged analytical approach with the aim to understand the demographics, lifestyles, consumer behaviour and location of individuals and households. The model was created in the United States by the company Experian. In the first step of the approach the institution Experian analyses the latest social trends in a country. During the second step the most appropriate data is collected, required for an accurate classification of the consumers. It follows the phase where the data is clustered. In the end the market is analysed with the objective to identify marketing channel preferences and to help validating and interpreting the segmentation. The outcome is a classification of all individuals, households or postcodes in a country into homogenous lifestyle types. The result for the year 2018 are 15 groups with over 60 subgroups (Experian, 2018).

The model is a demographic segmentation system which enables a multidimensional view of community including different socio-economic and life stage factors. Figure 5 shows the relationship between different lifestyle types. It is called the “Mosaic UK family tree” (Da Silva Wagner & Bug, 2015). The fields of different colours refer to the 15 groups. The circles inside these fields represent the corresponding subgroups. For an overview of the groups and subgroups see the appendix. The black frame around the square indicates the characteristics of the different groups (ibid.).

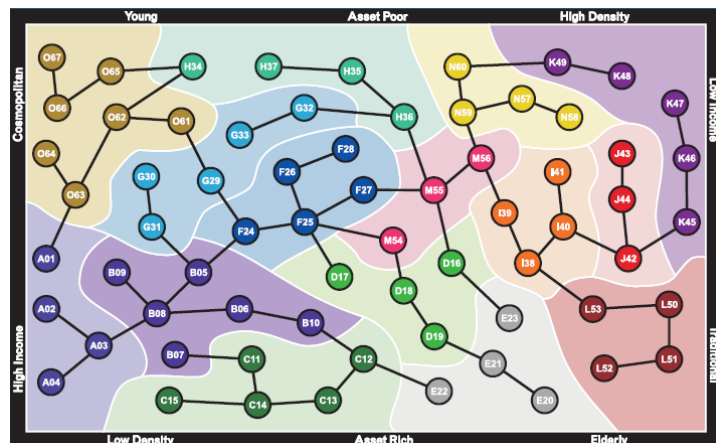


Figure 5: Mosaic UK family tree (Source: Da Silva Wagner & Bug, 2015, p. 23)

A disadvantage of the model is its focus on the United Kingdom which makes it hard to get closer information about the application in the rest of Europe. Furthermore, the instrument is rather complicated as there is a huge number of different groups and subgroups. The model is appropriate when a specific description of target group is needed, but if a company wants to get a broad overview over its consumer segments it is rather inefficient (ibid.).

2.3.4 Housing Trends 2030

In 2008 the GdW (old name: Gesamtverband deutscher Wohnungsunternehmen), today also known as Bundesverband deutscher Wohnungs- und Immobilienunternehmen, conducted the future study “Wohntrends 2020” for the housing industry. This umbrella organization developed a housing matrix which represents a target group system. The latter is tailored for the purpose of specific housing industry needs. Based on this study, Analyse und Konzepte (consulting company specialized in the areas of housing, real estate and urban development) and InWIS (Institut für Wohnungswesen, Immobilienwirtschaft, Stadt- und Regionalentwicklung) developed new housing trends in 2013. This second study was called “Wohntrends 2030”. The following description refers to this second study (Analyse und Konzepte & InWIS, 2013).

“Wohntrends 2030” was conducted using a quantitative telephone survey with residents of Germany. 3 031 persons participated in this first survey. In a second qualitative questionnaire 28 in-depth interviews were conducted. Six different attitudes towards living/housing, so-called housing concepts, could be developed out of the given answers. The housing concepts were already established through the first study in 2008. In 2013 the existing housing concepts were checked and their structure was confirmed.

The mentioned housing concept is one part of the housing matrix. Besides, the age and household type as well as the purchasing power are included in this matrix. In combination the three (age and household type count as one) parts illustrate different demand groups with specific demands on apartment, living environment and facilities. The matrix reveals 69 demand groups which can be summarized in 24 different residential profiles (ideal-typical demanded housing offers).

Table 3 illustrates just one part of the matrix in order to keep it simple. It shows the six current housing concepts with their characteristics and demand groups. The housing concepts were selected for this report, because they are the most illustrative and comprehensive part of the matrix. For detailed information on the residential profiles and their demand groups see Analyse und Konzepte & InWIS (2013).

Table 3: Housing Concepts from 2013 (according to *Analyse und Konzepte & InWIS*, 2013, p. 19-20). RPP = Residential Purchasing Power. Only rough summary of the demand groups.

Housing concept	Characteristics	Demand groups
Conventional	High level of life satisfaction; taking part in social and cultural life; high level of security combined with a forward-looking life plan; demand for housing strongly fixed on practical benefits in coming years; taking into account technical and ecological developments against the background of concrete benefits	All age and household groups with low to high RPP
Communicative	Strongly externally oriented; dynamic, flexible and mobile; life in community through virtual networks as well as public spaces; households are open to other cultures or social groups; no concrete living ideas; high willingness to communicate	Mainly singles and couples aged under 30 to 65 and over with low to high RPP; families with low to high RPP; household with more than two adults and low to medium RPP
Domestic	Strong interior orientation; friends and family grouped closely around the centre of life; good neighbours important; safety and sustainability important for the decisions of the housekeepers; furnishing the home is important	Mainly singles and couples aged under 30 to 65 and over with low to average RPP; families with low to high RPP; households with more than two adults with low to high RPP
Sophisticated	Self-confidence and individualism against the background of a high performance and success orientation; optimisation efforts combined with a high willingness to perform, lead to high expectations; demand for representative locations or pronounced environmental awareness (energetic equipment, ecological materials)	Mainly singles and couples aged under 30 to 65 and over with low to high RPP; families with low to high RPP; households with more than two adults with low to high RPP
Modest	Low expectations; inward-looking life; order, cleanliness and security is important, demand for apartments is traditional and solid; high degree of solidarity with the location; clear separation of living, work and the public is important	Singles and couples aged 45 to 65 and over with low to medium RPP (65 and over aged with high RPP); families with low to medium RPP; households with more than two adults with low to medium RPP
Functional	High degree of dissatisfaction with life; few material options that leave little room for improvement; demand for simply furnished flats; great desire for an improvement in the living situation combined with corresponding mobility	Singles and couples aged 30 to 65 and over with low to medium RPP; families with low to medium RPP

The housing concept is a useful tool for the real estate industry. It focuses on the development of living desires on the demand side in order to compete for clients. It is not only useful for marketing strategies but also for knowledge about the housing or living preferences of the population. The concept could be adapted to regions beyond Germany.

A further study on housing forms has been conducted on behalf of the Austrian Bundesministeriums für Verkehr, Innovation und Technologie (engl. Federal Ministry of Transport, Innovation and Technology) in 2002. The purpose of the study was firstly, to outline the tendencies of different lifestyle types to move into a detached house. Secondly, it was the aim to find these lifestyle types, which potentially could be convinced to live in an apartment rather than a detached house. The study used an already existing lifestyle typology and then asked people for their willingness to move from their current homes to others. The present report only points to this study, because the focus is not on lifestyle types but rather on the tendencies to change residence. However, the study is of interest in terms of the housing/living with its great negative environmental impacts. For any further information on the study see Moser et al. (2002).

2.4 Sustainable lifestyle approaches and concepts

Sustainable lifestyle concepts or rather ecological relevant domains on which individual behaviour impacts, are highly dependent on study conditions. These conditions concern spatial and temporal aspects of a study designed to collect data about sustainable lifestyles (e.g. lifestyles in one city and one specific year are examined; therefore, the evolving lifestyle concepts are restricted in terms of area and time). The mobility and energy sectors are most common topics of research on lifestyle. The environmental behaviour is also important in terms of consumption following the report “Konsumverhalten und Förderung des umweltverträglichen Konsums” on behalf of the Swiss Federal Office for the Environment (FOEN). This report points out different typologies of lifestyles from an environmental scope. For further description of these environmentally conscious lifestyle typologies see Visschers et al. (2010). It follows a presentation of six concepts of different research topics drawn from various sources of literature.

2.4.1 General typology of environmental behaviour

In 2007 the British Department for Environment, Food and Rural Affairs (DEFRA) developed a typology of environmental behaviour in order to protect and improve the environment by increasing the contribution of individual and community action (DEFRA, 2007). The “DEFRA Survey of Public Attitudes and Behaviours Toward the Environment” is based on a survey of approximately 3 600 people in England being asked about their attitudes and knowledge in relation to the environment (transport, energy and water efficiency, recycling, purchasing). Based on these interviews and the collaboration with stakeholders 12 headline behaviour goals were identified (e.g. use more efficient vehicles, use car less for short trips, more responsible water usage, install insulation, increase recycling, buy energy efficient products etc.) and further processed as follows:

First, each of the headline goals was placed in a chart to sort them according to their level of environmental. The horizontal axis of the first chart refers to the current behaviour (ranging from low proportion of population following the headline to high proportion of population), the vertical axis shows the impact, quantified by the amount of CO₂-emissions. Furthermore, the DEFRA considered people’s willingness and ability to act on the headline goals. Hence, second, the 12 goals were put in another chart, spanned by the x-axis “willing to act” (quantified by proportion of population) and the y-axis “ability to act” with the two poles high and low. Third, motivators (e.g. feel good factor, social norms, individual benefits etc.) and barriers (e.g. external constraints, habit, scepticism etc.) related to these goals were identified (ibid.).

The final result of this research process is the model visualized in Figure 6. It displays the result of the four steps of processing, explained above and shows seven population segments with different levels of ability to act (vertical axis) and of willingness to act (horizontal axis). The detailed profiles of each segment explain the ecological worldviews, lifestyles, attitudes, behaviours etc. They are described in the yellow fields (see Figure 6). The percentage share on the bottom of each field refers to the share of the segment in the British population of the year 2007 (ibid.). For closer description of the segments see DEFRA (2007).

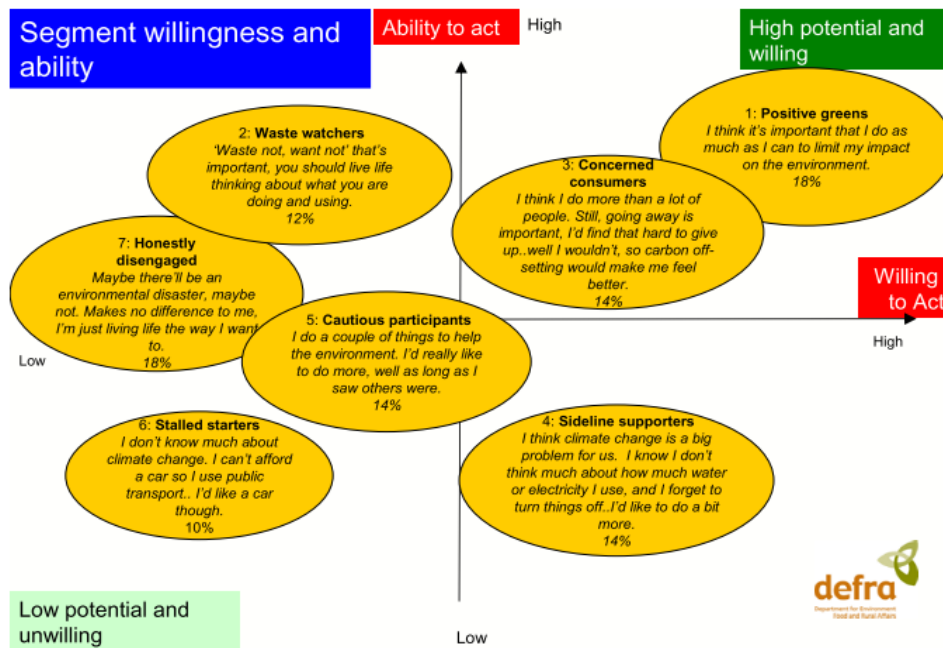


Figure 6: The seven British population segments in 2007 (Source: DEFRA, 2007, p. 8)

The model could be of use for other countries than the United Kingdom. Yet, the presented model in this report is spatially restricted and any application to other regions would need a transformation and adaptation of the model respectively its development.

2.4.2 Forms of environmentally conscious behaviour in Germany

Balderjahn developed a typology in 1986 and therewith aimed at decrypting the overarching context of conditions of complex mentalities (Lüdtke, 1989). He did this by analysing the answers to questions about life goals from approximately 2 000 people in Germany, aged 14 to 54 years old. By working with covariance-structure models Balderjahn Figured out different forms of environmentally conscious consumer behaviour. These forms root in personal values, attitudes, personality traits including the socio-political position as well as demographic and socio-economic traits, the effect of socialization and media. Five behaviours with their corresponding conditions described in table 4 were deducted from 14 single indicators of environmentally conscious consumer behaviour (ibid.).

Table 4: Forms of environmentally conscious behaviour of Balderjahn (according to Lüdtke, 1989, p. 98-99)

Forms of behaviour	Dependent on...
Energy-saving behaviour: room isolation	...income, age, education, municipality size, connection to traditions, value orientations wealth and thriftiness
Energy-saving behaviour: restrictions	...education, congregation size, acting control (environment- and society-changes through privates and government), value orientations wealth and thriftiness
Environmentally aware consumption of goods	...acting control, advocacy of ecological lifestyle, value orientation social security and thriftiness
Environmentally aware protest	...age, advocacy of ecological lifestyle, self-administration, value orientation material security, wealth and thriftiness
Environmentally aware transport of passengers	...age, advocacy of ecological lifestyle, value orientation material security, social security, thriftiness

The five forms do not represent clear behavioural styles. They are rather components of a style. Therefore, the explanatory power of the concept is little but nevertheless the approach allows to phrase plausible hypothesis about certain conditions regarding the situation, the competences and the motivation of individuals. These conditions need to be fulfilled to enable the development of an ecological conscious lifestyle (ibid.).

2.4.3 Energy consumption of US-citizens

Reusswig (1994) describes the concept resulting from the study of Lutzenhiser/Hackett, conducted in San Diego in 1993. The study operationalized the term “lifestyle” related to income classes, lifestyle groups and forms of housing. The theoretical background of the study is the thesis of social and material structure of consumption. This thesis tells that; (1) the energy consumption not only correlates with the social status but is even a constitutional element of the same; (2) a great part of the energy consumption is embedded in the material consumption and therefore hard to change; (3) the consumption of energy and other natural resources is dependent on their provision. The consumption of energy does not follow an economic cost-benefit-concept but is rather influenced by a range of cultural and lifestyle specific factors.

The model assumptions of Lutzenhiser/Hackett include three factor groups with different subgroups which could influence the energy consumption behaviour: (1) social environment (energy costs, laws, social norms); (2) natural environment (temperature, sun radiation, seasonal change); (3) private household (building properties, cultural behaviour, technologies).

The study was conducted and set up as follows: empirical results from 3 600 households in San Diego were clustered in three different variables. First, the income variable was differentiated in four categories: (1) lower class; (2) lower middle-class; (3) middle class; (4) upper middle class. Second, these income classes were combined with the variable lifestyle cycle which consists of six different categories (Lebensstil-Zyklen): (1) the young and (2) old singles, the (3) young and (4) old couples, and the (5) young and (6) old families. Finally, Lutzenhiser/Hackett differentiated the variable housing form into two categories (1) detached house and (2) apartment house. The three variables (income, group of lifestyle cycle, and housing form) with their corresponding categories were put in relation to energy consumption and CO₂-emissions. Regarding the energy consumption four different forms were considered; the personal, the spatial, the technical, and the transport-related energy consumption.

Lutzenhise/Hackett presented 48 different US-lifestyles as a result of their study. For each of the 48 lifestyles the energy consumption and CO₂-emissions were determined. Some exemplary results are shown in table 5.

Table 5: Exemplary results of the Lutzenhiser/Hackett study (Source: Reusswig, 1994, p. 182). ah = apartment house; dh = detached house. Btu: heat unit required to heat one British pound of water by one degree of Fahrenheit. lb: pound.

Lifestyle cycle group; class; housing form	Energy consumption [Btu]	CO ₂ -emissionen [lb]
Older single; class 1; ah	70	2 332
Older couple; class 1; ah	117	4 108
Young family; class 2; ah	127	4 272
Young couple; class 4; ah	161	5 653
Older family; class 3; ah	223	7 996
Young single; class 2; dh	240	9 441
Young couple; class 3; dh	264	10 117
Older family; class 4; dh	373	13 637

Table 5 points out that living in detached houses (dh) means more energy consumption and CO₂-emissions compared to apartment houses (ah), independent of the income class. Besides, higher income classes consume more energy and emit more CO₂ compared to lower income classes.

The study is very comprehensive. For more details see Reusswig (1994).

The approach of Lutzenhiser/Hackett is highly objective (ibid.), emotional and subjective aspects of lifestyle and lifestyle impacts are not considered. The approach focuses on energy and emissions only, so the results do not reflect all lifestyle impacts.

2.4.4 WELSKO: Attitude towards energy consumption and behaviour patterns in Germany

WELSKO stands for “**W**erte, **L**ebensstile und **K**onsumverhaltensweisen” (engl. “values, lifestyles and consumption patterns”) and is the name of a typology of lifestyles developed by Prose and Wortmann in 1991. They investigated the energy-saving attitudes and behaviours of the citizens of Kiel (Germany) on behalf of the Stadtwerke (municipal utilities). The Stadtwerke wanted to transform from a company which supplies energy to one which offers energy services, and therefore it needed information about the energy saving behaviour of their customers in order to develop a targeted marketing strategy (Reusswig, 1994).

Four value orientations, ten lifestyle factors and six consumption patterns were identified based on the answers to questions covering the issues value setting, lifestyles and behaviour. A cluster analysis allowed to cluster the persons with similar answer patterns into seven groups. The groups differ primarily regarding perception, thinking and behaviour. For completion socio-demographic data (age, sex, education, profession, income, budget situation) was added to the clusters (ibid.).

The WELSKO-Typology (see table 6) shows the segments into which the market for energy saving can be divided. The different segments refer to the patterns of values, lifestyles and consumption. According to Kuckartz (2001) the study achieved its objective to gain information about the energy saving behaviour of the Kieler citizens.

Table 6: WELSKO-Typology with seven lifestyle groups (according to Reusswig, 1994, p. 200-204)

Cluster	Characteristics
Economically modest	Heterogeneous age distribution; low income; importance of social security; family and health; low leisure activity → Consumer behaviour: consumption restraint and thriftiness
Open-minded value pluralists	Average 38 years old; many employees, civil servants, students, self-employed; wide range of activities, large circle of friends; importance of fitness and trend orientation → Consumer behaviour: low energy consumption for durable household goods, striving for environmentally friendly consumption
Pleasure emphasisers	Younger people; hardly any sense of responsibility; many unemployed people; importance of lust and sociability → Consumer behaviour: spontaneous purchases, trend and fashion as buying motives
Environmentally conscious conservatives	Over 50 years old; importance of family, health and orderly conditions; leisure activity in domestic environment → Consumer behaviour: learned and environmentally responsible, appropriate consumption
Environmentally conscious alternatives	Young people; many employees; self-realization, self-responsibility, socio-cultural; many children in the household; importance of originality and environmental friendliness → Consumer behaviour: targeted purchase of environmentally friendly products, little consumption-oriented
Uninterested materialists	Average 40 years old; above average educational attainment, many employees; little importance of self-realization, family and fun; importance of uniformity and simplicity

	→ Consumer behaviour: high technical adaptation, no environmental orientation
Environmentally activatable	Average 29 years old; many single households; hardly any children; importance of environmental protection, health and social responsibility → Consumer behaviour: spontaneous purchases, madness without exclusivity, energy saving is no purchase criterion

This study is another example of a specific typology, here only applicable to the area of Kiel. Hence, an implementation on a broader area level would require adaptations or even transformations of the approach.

2.4.5 ISOE-Types of mobility in Germany

The research project “CITY:mobil” conducted by the Institute for socio-ecological research (ISOE) and the Eco-Institute of Freiburg, Germany in 1998, identified different mobility styles. Since the focus was on mobility styles no independent lifestyle typology was aimed at. Rather lifestyle traits were included in the mobility type formation. The motivation of this project was to develop communication strategies based on mobility styles in order to achieve a transformation of the mobility behaviour. 1 000 representative interviews with citizens of Freiburg and Schwerin each (Germany) were carried out. The mobility orientation, the lifestyle traits and the mobility behaviour were surveyed. Mobility types, a summary of mobility orientation, and mobility behaviour were identified through a factor analysis. In this analysis the lifestyle served as a passive variable for the description and completion of the respective mobility type. Four respectively five mobility types were detected in the two cities. The lists below show these different types with the percentage share of population in brackets for Freiburg and Schwerin (Kleinhüchelkotten, 2005).

For Freiburg:

- Ecologically decided (17%)
- Status-oriented automobiles (15%)
- Traditionally nature-oriented (24%)
- Traditional domestic (24%)
- Risk-oriented car fans (20%)

For Schwerin:

- Insecure status-oriented (38%)
- Mobile experience-oriented (12%)
- Discreet environmental concerns (32%)
- Aggressive drivers (18%)

Similar to the WESLKO-Typology, the “CITY:mobil” project resulted in very accurate types, yet they are very place specific.

2.4.6 Environmental awareness in Germany in 2014

The following presentation of the environmental awareness study refers to the Umweltbundesamt (UBA), 2015. The study about environmental awareness in Germany conducted by the “Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit” and the “Umweltbundesamt” is published every two years and investigates the environmental consciousness of the German population. Social milieus serve as interpretation background. These milieus allow to specify the analysis of environmental awareness and

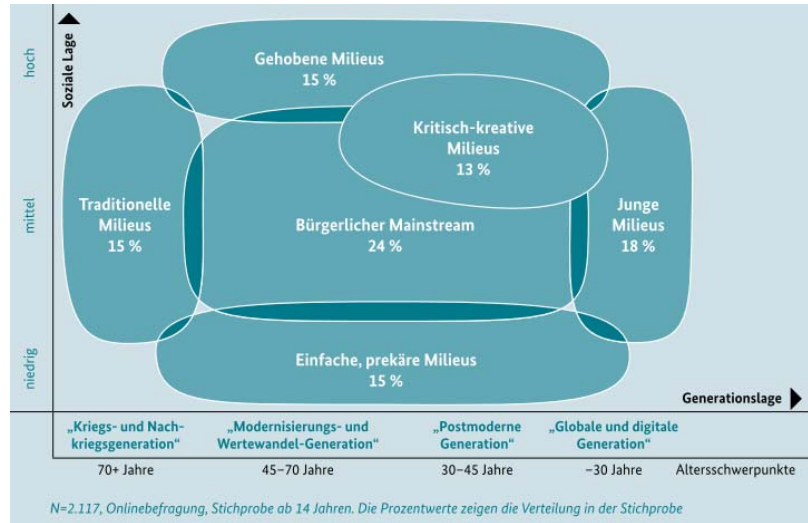


Figure 7: Model of social milieus of sociodimension (Source: Umweltbundesamt (UBA), 2015, p. 17)

behaviour. The milieu model used in the study is shown in Figure 7 (it is of Sociodimensions, an Institute for socio-cultural research) and is similar to the Sinus-Milieus. These two models differ regarding the horizontal axis; unlike the Sinus model the horizontal axis of the model used in the UBA-report indicates the age classes or generations, whereas the Sinus model refers to degrees of modernization. Furthermore, the model of Sociodimensions has less milieus than the Sinus model. For a closer description of these Sociodimensions milieus used in the UBA-report see table 7.

Table 7: Typology of the social milieus model of Sociodimensions (according to Umweltbundesamt (UBA), 2015, p.16-17). German names of the milieus in brackets.

Milieu	Characteristics
Traditional Milieu (Traditionelles Milieu)	Higher and highest age groups (mostly over 70 years old); different educational levels; different incomes; many retired persons. Seeking order, security and stability; desire to preserve the familiar. → Motto of life: hopefully everything remains as it is.
Upper Milieu (Gehobenes Milieu)	Middle and higher age groups (40 to 70 years); higher level of education; higher income. Performance and success-oriented; feasibility and economic efficiency as benchmarks. → Motto of life: to be proud of what has been achieved and to enjoy it.
Critical-creative Milieu (Kritisch-kreatives Milieu)	Different age groups; medium or higher formal education; broad spectrum of different incomes. Enlightened, cosmopolitan, tolerant and committed; diverse intellectual and cultural interests. → Motto of life: critically questioning things; living responsibly and meaningfully.
Modern Mainstream (Bürgerlicher Mainstream)	Middle and higher age groups (40 to 70 years); medium formal education; medium incomes. Self-image as the centre of society; strong sense of community; oriented towards comfort and convenience; pronounced price-performance awareness; increasing fears of social decline. → Motto of life: belonging, being integrated.
Simple-precarious Milieu (Einfach, prekäres Milieu)	All age groups; low formal education; low income. Participation in consumption and social life severely restricted.

	→ Motto of life: to make ends meet, not to attract negative attention.
Young Milieu (Junges Milieu)	Youngest age group (under 30 years); mostly still in education and often dependent on parents. Digital Natives, grown up with new technologies; perception of the future as insecure and actually unpredictable; family an important haven of peace. → Motto of life: finding one's place.

Over 2 000 inhabitants of German were interviewed and then grouped into the different milieus according to their answers. The main topics which the interviews tried to cover were amongst others the following: a) what means living a “good life” and what role does the environment play in this context? b) What environmental settings or attitudes do people have? c) How about the environmental behaviour of the German inhabitants?

The attitude and behaviour is connected via an environmental typology, which was created by the Umweltbundesamt. It describes five different environmental types. The latter differ from each other through different statements in the interviews about the environmental attitude and the consumption patterns. The types were developed as follows: after the interviews, a cluster analysis grouped the survey participants into different environmental types. The latter were then integrated in the model of Sociodimensions, so the

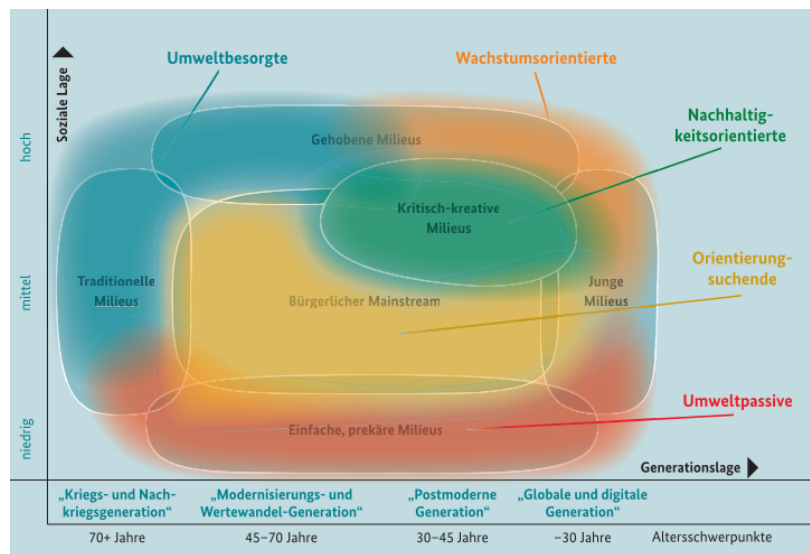


Figure 8: Environmental types within the Model of social milieu (Source: Umweltbundesamt (UBA), 2015, p. 77)

environmental attitude and behaviour of the different milieus got visible. Figure 8 shows this visualization with the environmental types in colours. The different environmental types and their colours are the following: sustainability-orientated (green), environmentalists (blue), orientation seekers (yellow), growth-oriented (orange), environmental passives (red) (ibid.). For closer description of the environmental types see Umweltbundesamt (UBA), (2015).

Another study conducted by the Umweltbundesamt (UBA) (Kleinhückelkotten et al., 2016) in 2016 takes up the social milieu model of Sociodimensions and focuses on energy consumption levels. Figure 9 illustrates different energy consumption levels per capita of each milieu. The levels are spread on the vertical axis and the milieus on the horizontal axis. The different colours of the bars refer to various areas of energy consumption. The light green bar segment stands for energy consumption by heating, the light red one for consumption by everyday mobility, the upper dark red one for leisure mobility, and the upper yellow one for consumption by nutrition, just to mention the big segments of consumption.

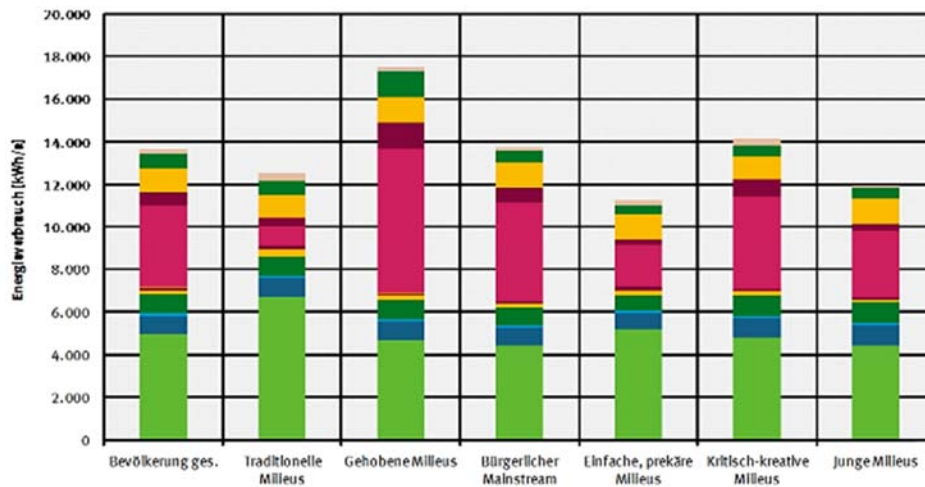


Figure 9: Energy consumption by different milieus (Source: Kleinhüchelkotten et al., 2016, p. 64)

Figure 9 clearly shows that the upper milieu (third bar from the left) consumes the most energy. This is mainly due to its everyday mobility. It follows the critical-creative milieu (second bar from the right) with the heating and everyday mobility more or less evenly contributing to the high energy consumption level.

The levels of energy consumption do not match with the environmental types in Figure 8. Both the upper milieu and the critical-creative milieu perceive themselves as rather environmentally conscious, yet these are the milieus with the highest energy consumption. These findings confirm the mind-behaviour-gap discussed in Chapter 2.2.1.

The combination of environmental types and the milieu model of Sociodimensions can be useful for communication strategies to raise and foster environmental awareness; the environmental types reveal different patterns in environmentally related behaviour, the social milieus describe different everyday cultures and show the proximity or distance between the various lifestyles and their corresponding position in the social hierarchy. Together, the environmental types and the social milieus embed the environmental behaviour in a generational context and could facilitate communication (Umweltbundesamt (UBA), 2015).

The concept is broadly applicable and not attached to a specific place or country, given the milieus are identified.

3. Socio-economic data for the Alpine region

A reasonable choice of a lifestyle concept for CIPRA-activities requires knowledge about the residents of the Alps. Chapter 3.1 presents a collection of data regarding demographics and Chapter 3.2 outlines the significance of the collected data for lifestyle transformation measures. These measures should mainly tackle the following three domains of life with the greatest impact on the environment: nutrition, living and mobility (Bundesamt für Umwelt BAFU, 2018). They also are guiding topics when it comes to suggestions where to start with lifestyle change.

Preface: spatial area considered

The alpine area extends from France over Monaco, Italy, Switzerland, Liechtenstein, Germany and Austria to Slovenia. From the three different existing perimeters of the Alpine region, by name the Alpine Convention, the Alpine Space and the Eusalp, this report works with the Alpine Convention perimeter shown in green on Figure 10 (Permanent Secretariat of the Alpine Convention, 2017).

The boundary of the green perimeter stands for the perimeter of the Alpine Convention and matches with the boundaries of the involved 28 NUTS 2² regions. The NUTS system is a hierarchy

of regions within the European Union. The system helps to identify and classify the spatial units of references in Europe and largely corresponds to political subdivisions (Wikipedia, 2018b). The present report uses inter alia data from 28 NUTS 2 regions, which all together form the Alpine Convention perimeter. For detailed information on these 28 NUTS 2 regions see the appendix. The country Monaco is not considered in this report due to lack of data even though it is part of the Alpine Convention.

3.1 Socio-economic data and land-use patterns

The following Chapters summarize the findings from the literature and from statistical data sources, covering demographic, economic and land use topics. Chapter 3.1.1 gives an overview over demographic data for the entire Alpine Convention (not on NUTS 2 level). These are the number of people living in the Alpine region, population density as well as age and gender distribution. This data is derived from the literature. Chapter 3.1.2 to 3.1.5 introduces data on NUTS 2 level, by name the employment by sector, the net income (purchasing power standard (PPS) per capita), the gross domestic product (PPS per capita) as well as urban sprawl and accessibility. The selection of this specific data does have different reasons; firstly, data availability on the NUTS 2 level for the focused topics, and secondly, the relevance of the topics for

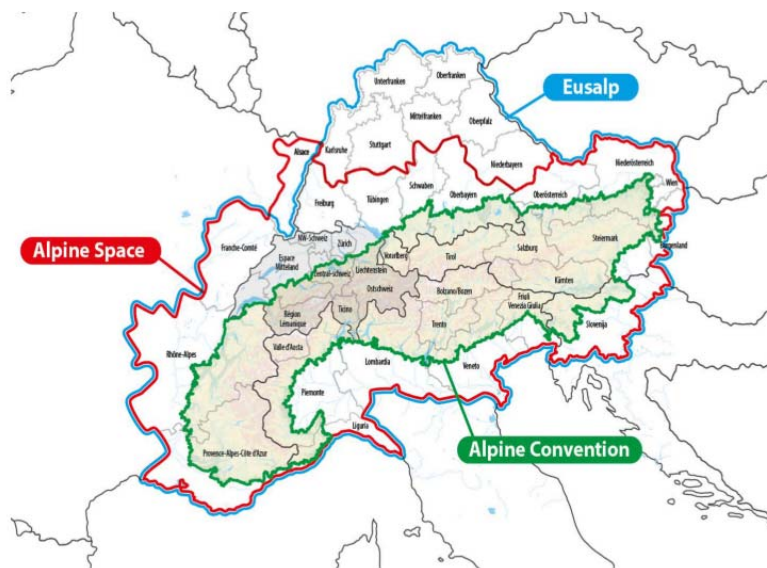


Figure 10: The different Alpine areas (Source: Permanent Secretariat of the Alpine Convention, 2017, p. 31)

²For this report the NUTS 2 classification 2016 according to Eurostat is considered (Source: https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NUTS_2016&StrLanguageCode=DE&StrLayoutCode=HIERARCHIC&IntPcKey=)

life in the Alpine region. Based on the population composition in the Alpine region assumptions about potential lifestyles and their transformation may be deduced.

3.1.1 Population density, population aging and gender distribution

Table 8 lists the number of people living in the different countries belonging to the Alpine Convention (first column) as well as the proportion of land in km² that the respective countries contribute to the Alpine region (second column). The data is from the year 2013, respectively 2010 for France. The red bars indicate the highest numbers amongst the countries referring to either people or area. Italy does clearly have the most people living in the Alpine area. Austria is the country with the largest share of space (Ständiges Sekretariat der Alpenkonvention, 2015).

	Bewohner des alpinen Raumes	Fläche (km ²) des alpinen Raumes
Deutschland	1.476.519	11.160
Frankreich	2.683.801	40.801
Italien	4.364.538	51.995
Liechtenstein	36.838	160
Monaco	36.950	2
Österreich	3.318.045	54.592
Slowenien	385.973	6.796
Schweiz	1.929.424	25.211
Alpen	14.232.088	190.717

Table 8: Population and area of the Alpine regions in 2013/2010 (according to Ständiges Sekretariat der Alpenkonvention, 2015, p. 17)

The map in Figure 11 gives a broad overview over the population density in the Alpine Convention in 2013. Colours refer to different degrees of density. Population density is well reflected in the topographical conditions; in valleys and at the borders of the Alpine Convention the density tends to be higher compared to the less accessible mountainous regions (Elmi & Streifeneder, 2018).

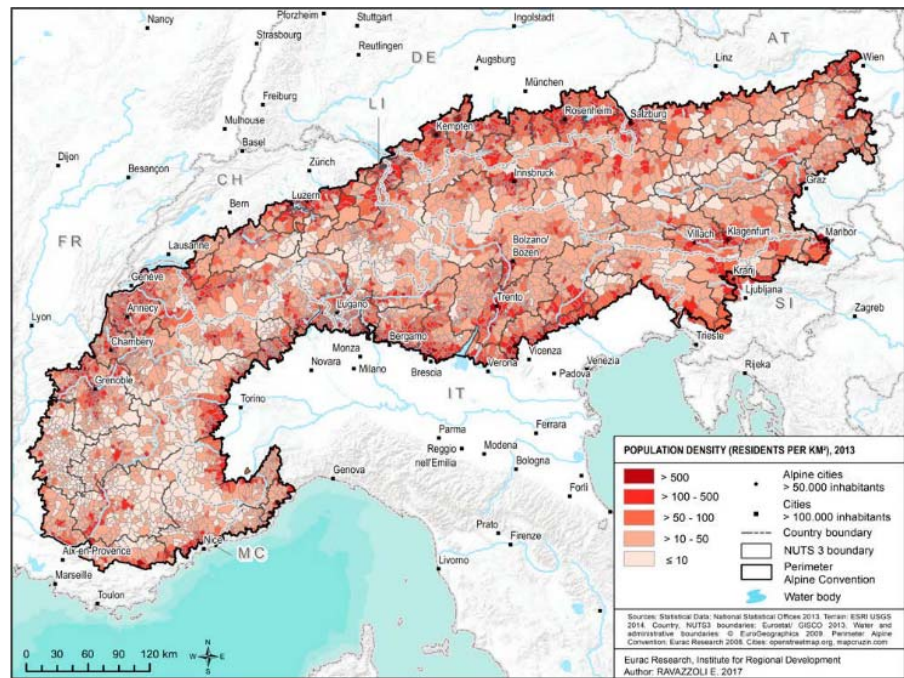


Figure 11: Population density in 2013 (Source: Elmi & Streifeneder, 2018, p. 14)

There is an aging population in the Alpine region, as roughly for the rest of Europe. In the Italian and German Alps, the age of people living there is above the national average age, whereas it is below the average in the Swiss and French Alps (Elmi & Streifeneder, 2018). For a table see Figure 12. A high index number (dark red) refers to an old population and a low index number (light red) represents a young population.

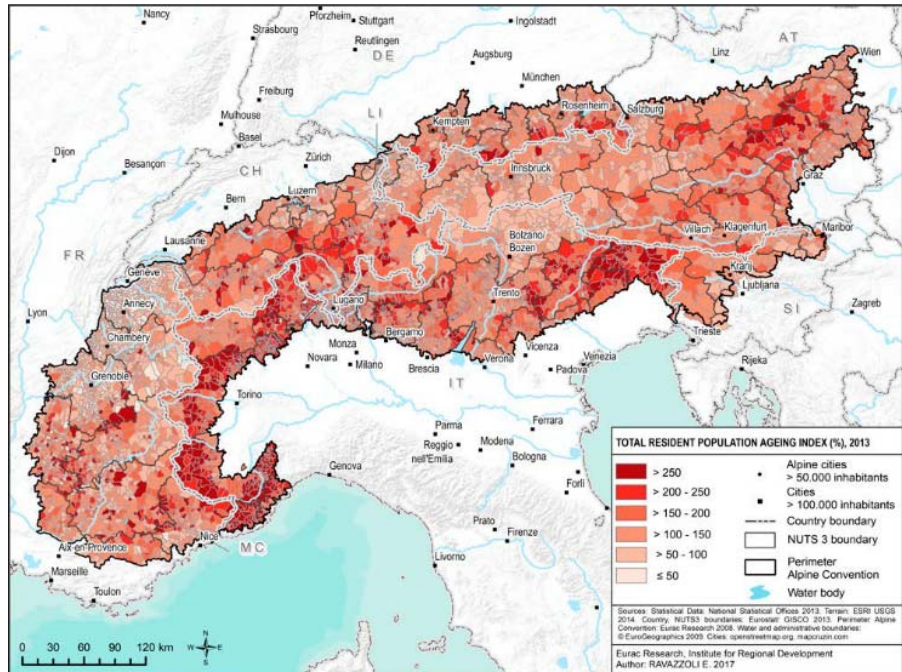


Figure 12: Population aging in 2013 (Source: Elmi & Streifeneder, 2018, p. 15)

Regarding gender distribution, the Alpine region is even and does not deviate a lot from the national average; the ratio of women and men is approximately 50% (Ständiges Sekretariat der Alpenkonvention, 2015).

3.1.2 Employment by economic sector

Regarding the employment the Alpine region is dominated by the tertiary sector, the services, which is clearly shown in Figure 13³. Again, the trend of tertiarization takes place all over Europe. The most important subsector is tourism in the Alpine region (Ständiges Sekretariat der Alpenkonvention, 2015).

The share of the primary sector in all NUTS 2 regions belonging to the Alpine Convention is under 5%. Despite its low share over the whole Alpine region the primary sector is still important for the conservation of cultural landscape and further environmental topics such as the protection of the hydrological equilibrium (ibid.).

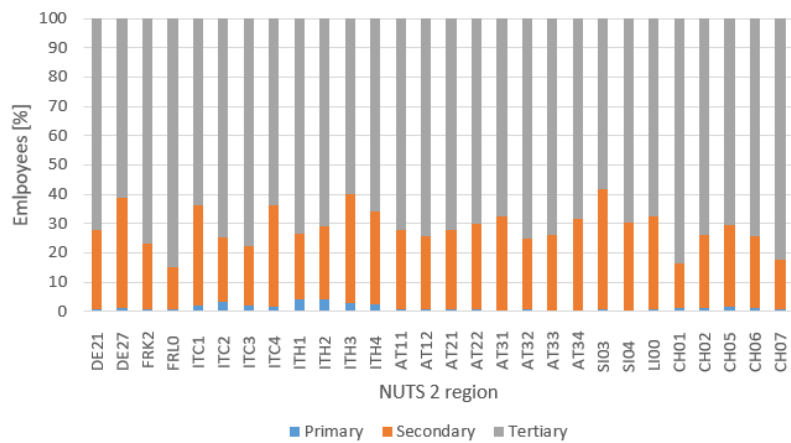


Figure 13: Employees by sector in 2011 (Data source: Eurostat)

³According to author. Link to data source: https://ec.europa.eu/eurostat/web/products-datasets/product?code=cens_11empn_r2

3.1.3 Net Income per capita

The net income distribution in PPS (purchasing power standard⁴) is relatively uniform through the Alpine region without taking into account the countries of Slovenia, Liechtenstein and Switzerland (see Figure 14⁵). The disposable net income in Slovenia is more or less half as high as in Germany, France, Italy and Austria. Only in Liechtenstein the income exceeds the 60 000 Euro per capita. The Swiss inhabitants also have between 40 000 to more than 50 000 Euro at their disposal. Figure 14 illustrates that there are considerable differences regarding the net income between Liechtenstein respectively Switzerland and the rest of the Alpine region.

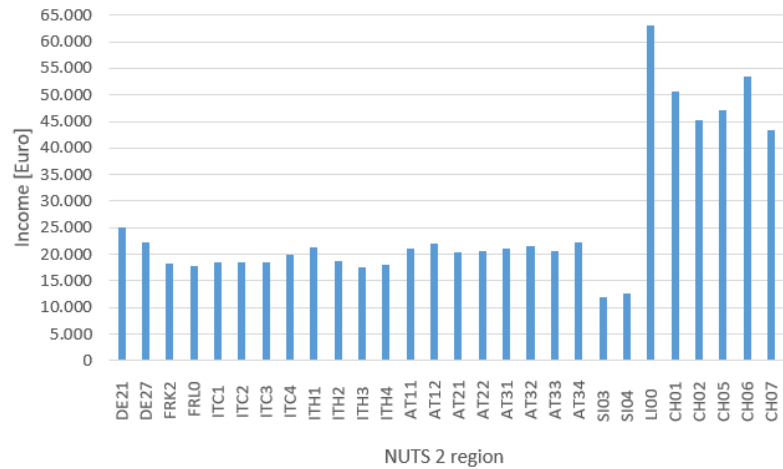


Figure 14: Net income per capita in 2014 in PPS (Data source: Eurostat, Bundesamt für Statistik, GfK). The Purchasing Power Standard (PPS) was integrated in the calculations in order to provide comparable data.

3.1.4 Gross Domestic Product per capita

Figure 15⁶ shows the GDP per capita in PPS. The GDP is defined as the value of all goods and services produced within a year in a specific region (Wikipedia, 2018a). For Switzerland there exists no GDP data on a NUTS 2 level, therefore the data on a NUTS 3 level (small regions) making up NUTS 2 is used here. There is no GDP data available for Liechtenstein. For closer description of the Swiss NUTS 3 regions see the appendix.

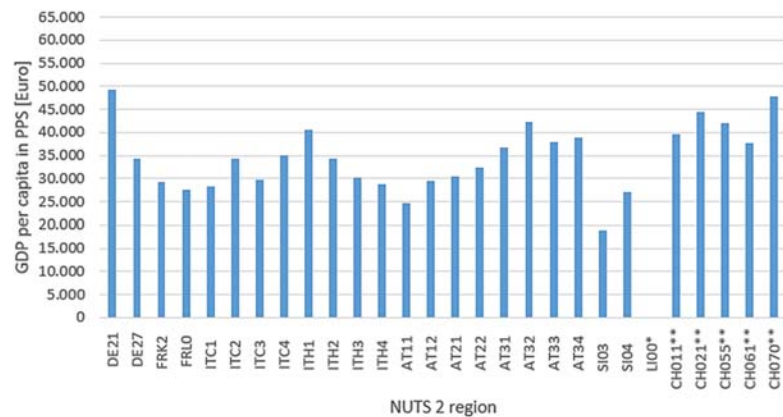


Figure 15: GDP per capita in 2014 in PPS (Data source: Eurostat, Bundesamt für Statistik). * no data available, ** using data from NUTS 3 regions.

⁴Artificial currency unit; created in order to have a viable comparison base of different currencies (Eurostat, 2014).

⁵According to author. Links to data source: https://ec.europa.eu/eurostat/web/products-datasets/product?code=nama_10r_2hhinc ; <https://www.bfs.admin.ch/bfs/de/home/statistiken/wirtschaftliche-soziale-situation-bevoelkerung/einkommen-verbrauch-vermoegen/haushaltsbudget.assetdetail.1400581.html> ; <https://www.gfk.com/de/insights/press-release/kk-europa/>

⁶According to author. Links to data source: https://ec.europa.eu/eurostat/web/products-datasets/product?code=nama_10r_2gdp ; <https://www.bfs.admin.ch/bfs/de/home/statistiken/volkswirtschaft/volkswirtschaftliche-gesamtrechnung/bruttoinlandprodukt-kanton.assetdetail.6369946.html>

3.1.5 Urban sprawl and accessibility

Figure 16 shows the land cover of the area of the Alpine Convention in 2012 and provides a first impression of how the Alpine region is segmented. Most of the Alpine territory is covered by forests and semi natural areas (in green). The few artificial surfaces (in red) represent the built-up areas and may be areas with urban sprawl (Elmi & Streifeneder, 2018). Urban sprawl is an important ecological and economic topic and a recurring concern regarding decisions on

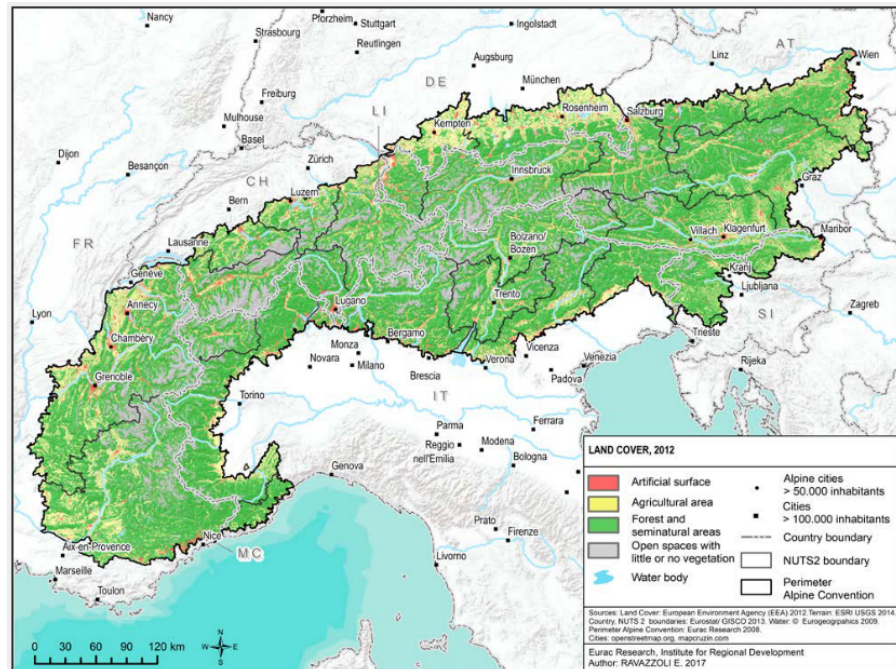


Figure 16: Land cover in 2012 (Source: Elmi & Streifeneder, 2018, p. 34)

land usage and housing consumption. It refers to the degree of area built over. A high urban sprawl describes a high area built over in a given region, a more dispersed built-up area and a higher uptake of built-up area per inhabitant or job. This definition of urban sprawl, according to Hennig et al. (2016b), includes three dimensions: (1) expansion of urban area; (2) scattering of settlement area; (3) low-density development. Hennig et al. (2016b) further describe the environmental consequences of urban sprawl, such as the partitioning of natural area into small patches and therefore smaller habitats for wild life population, the higher energy consumption per person in low density built-up areas compared to high density urban areas etc. One of the main drivers for urban sprawl is mobility. Hence, the network of transport possibilities (streets, rail) and the number of people having a car influences the scattering of buildings and infrastructure (ibid.).

The EEA-FOEN report by Hennig et al. (2016b) used the metric weighted urban proliferation (WUP) to measure urban sprawl. For further information on its calculation see Hennig et al. (2016b). An important value for the WUP calculation is the dispersion (DIS). It quantifies the spatial distribution of built-up areas in UPU/m². A high DIS value (> 45.5 UPU/m²) refers to high urban sprawl, whereas a low DIS value (< 42.5 UPU/m²) represents an area with low urban sprawl. The WUP values result inter alia from these DIS values. A WUP value over 4 UPU/m² is considered high, meaning high urban sprawl. WUP values below 2 UPU/m² describe an area with low urban sprawl (Hennig et al., 2016b). Figure 17 and 18⁷ show the DIS respectively the WUP values in 2009 for the NUTS 2 regions belonging to the Alpine Convention.

⁷According to the author; the selected data set for the NUTS 2 regions belonging to the Alpine Convention can be looked up in the appendix

The indicator dispersion hints at a high urban sprawl in most of the relevant NUTS 2 regions within the Alpine Convention. Two regions in Italy are the only with low dispersion sprawl. The NUTS 2 regions of France, Austria, Slovenia, Liechtenstein and Switzerland all have rather high values. Figure 17 indicates a clear tendency to high dispersion of built-up area – in other words; there are many rather highly dispersed regions in the Alpine Convention according to the dispersion itself.

When considering the overall indicator WUP the situation of urban sprawl looks slightly different; the tendency of high urban sprawl is less visible through the WUP than through the DIS (see Figure 18). This is because the WUP value includes also utilization density and the built-up area. However, the trends illustrated in Figure 17 and 18 are roughly similar.

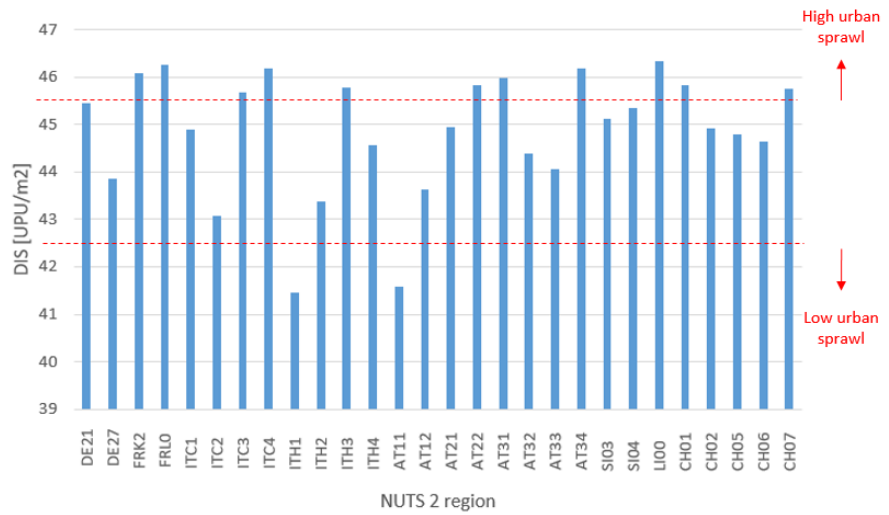


Figure 17: DIS in 2009 (Data source: Hennig et al., 2016a). Dotted lines: threshold for degree of urban sprawl.

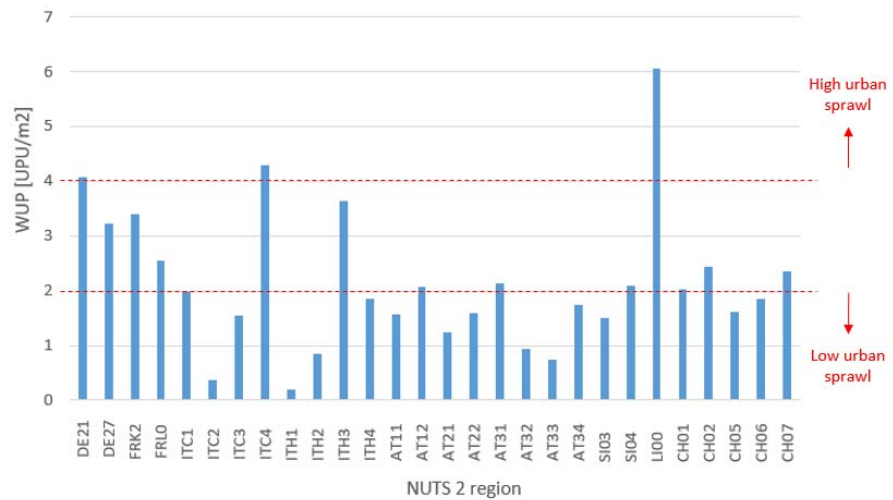


Figure 18: WUP in 2009 (Data source: Hennig et al., 2016b). Dotted lines: threshold for degree of urban sprawl.

Scattering of houses and apartments is widespread in Alpine regions, and the accessibility is often pivotal for life there, especially for the little villages in remote areas. Accessibility is measured by the travel time to urban centres (over 5 000 inhabitants) by car (Elmi & Streifeneder, 2018). The results for accessibility in 2017 is visualized in Figure 19. The main valleys and the areas on the edge of the Alps are easier to reach than the peripheral areas, which are mainly located in the western part of the Alps. Low accessibility therefore illustrates the topographical conditions similar to low population density described in Chapter 3.1.1 (ibid.).

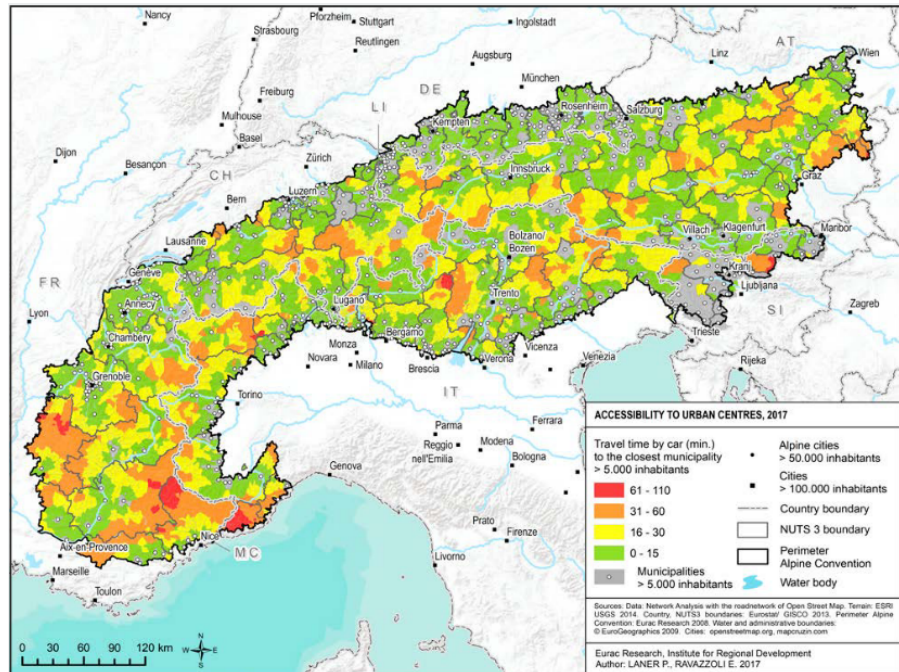


Figure 19: Accessibility to urban centers in 2017 (Source: Elmi & Streifeneder, 2018, p. 25)

3.2 Empirical results and what influences consumer behaviour

The following Chapters outline what needs to be considered, when developing measures to change lifestyles. Data and information from Chapter 3.1 form the basis for targeting aspects of different lifestyles and this in turn leads to suggestions for possible modification of lifestyles. Different domains of lifestyles which are influenced by the demographic, socio-economic and land-use factors, explained in Chapter 3.1, will be mentioned.

3.2.1 Population density, population aging and gender distribution

Population density impacts on residents needing to commute, particularly those in mountainous regions who rely on well-developed transport-systems. The topic of mobility has already been broadly discussed by federal agencies of different nations and NGOs, inter alia the CIPRA. It would go beyond the scope of this report to discuss the huge topic of mobility any further. For more detailed information on the Alpine mobility see e.g. the publication “Report on Transport and Mobility in the Alps” (Ständiges Sekretariat der Alpenkonvention, 2007).

The age of the population has an influence on consumption patterns; senior citizens/older citizens tend to consume more living space than younger people, largely as a result of their financial possibilities and often as a result of houses/apartments which used to be habituated also by their children. Young people more often live in shared apartments, whereas elderly people rather can afford a detached house. The energy consumption and land-usage of young people therefore is smaller than the ones of older generations. This partially is outlined in the study conducted by Lutzenhiser/Hackett (see Chapter 2.4.3). In terms of lifestyle change the expectations of housing/living space people have, should be considered. Also, activities could be recommended to offer older people possibilities to switch houses.

There are no specific suggestions for the development of lifestyle changing measures regarding genders, as men and women are evenly distributed over the Alpine region. For further investigations on genders in terms of lifestyle change the findings of Rhein (2006) could be of interest. According to her women tend to have a more positive environmental attitude and perceive environmental risks as more threatening than men, while men seem to have a greater environmental knowledge than women.

3.2.2 Employment by economic sector

In this Chapter the three economic sectors are discussed, each with differing requirements with respect to lifestyle change.

Traditional values are of great importance to people working in the agricultural sector, so any suggested lifestyle changes need to be slight and gradual. Fostering regional nutrition could be one way to transform lifestyles in this sector.

Transportation is crucial for people employed in the industrial sector because usually they commute. The issue of mobility should be tackled via consultation of existing literature, such as the mentioned publication in Chapter 3.2.1.

The composition of the service sector with respect to the type of employment is very heterogeneous. Hence, the incomes do differ a lot and so do the living conditions. In terms of number of employees, the service sector is the most important sector out of the three. Therefore, it is crucial to find ways to transform lifestyles of service employees. Yet, without closer investigations on the different employments within the tertiary sector no reasonable suggestions can be made. For this reason, the pursuit of further research on the different occupations is recommended.

3.2.3 Net income per capita

Consumption, travelling behaviour, financial possibilities for environmentally friendly behaviour (e.g. available finances to renovate houses/apartments or to pay higher rents for well isolated houses/apartments)

and urban sprawl are inter alia dependent on the net income. The study of Kleinhüchelkotten et al. (2016) shows that people with low incomes live more environmental friendly than people with higher incomes. This is not the result of a greater environmental consciousness of the former but results of their little financial possibilities; they cannot afford several cars or a detached house which would lead to high CO₂-emissions and great energy consumption. People with high income and also more modestly living people of rural areas buy detached houses in these areas. The latter need to be accessible, therefore a well-developed mobility infrastructure is required. As mentioned in Chapter 3.1.5 this fosters urban sprawl. For suggestions on lifestyle change with respect to urban sprawl see Chapter 3.2.5.

In terms of consumption, travelling behaviour and financial possibilities for environmentally friendly behaviour the following is suggested; the provision of less energy and CO₂-intensive activities (e.g. fostering regional or national vacations, provision of services rather than of material products) could be a possibility to transform the lifestyles of especially people with high incomes into more sustainable ones. To propose income specific lifestyle activities is of great importance for the lifestyle change.

3.2.4 Gross domestic product per capita

The GDP influences lifestyle relevant scopes of public infrastructure (e.g. hospitals, schools etc.), employment participation, mobility, income and urban sprawl. A lifestyle change might be possible when considering the expectations people have on public services and infrastructures, e.g. municipalities having their own public indoor swimming pool. Hence, people's ideals of a good life are crucial. The employment participation or rather the employment situation of a person determines his/her life conditions and therefore raises different lifestyles and expectations of life. This fact has to be considered while developing measures to change lifestyles.

3.2.5 Urban sprawl and accessibility

Mobility and housing form are lifestyle domains which are influenced by urban sprawl and accessibility. It is important to incentives the willingness of people to live in municipal centres rather than rural areas, in order to foster sustainable lifestyles. This would reduce the volume of traffic due to the proximity of important facilities (e.g. shops, surgeries etc.) to peoples' homes. Because of space scarcity in urban areas people living in cities are forced to live in apartments, whereas people living on the countryside have enough space to live in a detached house. Consequently, pushing forward a living in cities would result in a lower surface and energy consumption. Besides this, knowledge about people's expectations on their housing form (e.g. having a second easily accessible vacation home, having enough living space etc.) is also important for developing strategies to change lifestyles. This means for instance that a preference for detached houses could be confronted with the advantages of apartments such as high quality and little tasks for management of the apartment.

3.3 Missing data

The collection of data in this report is incomplete regarding the domains of life with the greatest impact on the environment (nutrition, living and mobility). This is mainly due to the lacking data specifically for the Alpine region. Especially for the domain nutrition it is hard to find data facing the issue of food consumption. Furthermore, mobility data should be extended through data e.g. type of primarily used vehicles and ideally it should be available on NUTS 2 level. The same applies for the living situation, where it would be interesting to know more about the different housing forms (detached houses, apartments etc.) in the area of the Alpine Convention.

To browse through national statistics of the respective countries belonging to the Alpine Convention would probably enhance the data situation regarding the scope of living and mobility. For the issue of nutrition even specific national data is rare and presumably difficult to get.

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Appendix

Overview of the groups and subgroups from the Mosaic consumer classification

Group	Description	% †	% 🏠	Type	Description	% †	% 🏠
A	Alpha Territory	4.28	3.54	A01	Global Power Brokers	0.32	0.30
				A02	Voices of Authority	1.45	1.18
				A03	Business Class	1.83	1.50
				A04	Serious Money	0.68	0.56
B	Professional Rewards	9.54	8.23	B05	Mid-Career Climbers	2.90	2.30
				B06	Yesterday's Captains	1.80	1.84
				B07	Distinctive Success	0.48	0.48
				B08	Dormitory Villagers	1.81	1.29
				B09	Escape to the Country	1.41	1.31
				B10	Parish Guardians	1.14	1.00
C	Rural Solitude	4.84	4.40	C11	Squires Among Locals	1.01	0.85
				C12	Country Loving Elders	1.32	1.31
				C13	Modern Agribusiness	1.61	1.36
				C14	Farming Today	0.53	0.53
				C15	Upland Struggle	0.36	0.34
D	SmallTown Diversity	9.21	8.75	D16	Side Street Singles	1.21	1.17
				D17	Jacks of All Trades	2.60	1.99
				D18	Hardworking Families	2.87	2.63
				D19	Innate Conservatives	2.53	2.96
E	Active Retirement	3.41	4.34	E20	Golden Retirement	0.52	0.67
				E21	Bungalow Quietude	1.42	1.79
				E22	Beachcombers	0.57	0.60
				E23	Balcony Downsizers	0.90	1.29
F	Suburban Mindsets	13.16	11.18	F24	Garden Suburbia	2.82	2.14
				F25	Production Managers	2.31	2.63
				F26	Mid-Market Families	3.75	2.70
				F27	Shop Floor Affluence	2.82	2.73
				F28	Asian Attainment	1.45	0.98
G	Careers and Kids	5.34	5.78	G29	Footloose Managers	1.11	1.67
				G30	Soccer Dads and Mums	1.34	1.34
				G31	Domestic Comfort	1.24	1.09
				G32	Childcare Years	1.46	1.52
H	New Homemakers	3.99	5.91	H34	Buy-to-Let Territory	1.08	1.79
				H35	Brownfield Pioneers	1.13	1.38
				H36	Foot on the Ladder	1.48	2.37
				H37	First to Move In	0.30	0.37
I	Ex-Council Community	10.60	8.67	I38	Settled Ex-Tenants	2.08	2.06
				I39	Choice Right to Buy	1.90	1.72
				I40	Legacy of Labour	3.46	2.68
				I41	Stressed Borrowers	3.15	2.20
J	Claimant Cultures	4.52	5.16	J42	Worn-Out Workers	1.82	2.30
				J43	Streetwise Kids	0.90	1.05
				J44	New Parents in Need	1.80	1.80
K	Upper Floor Living	4.30	5.18	K45	Small Block Singles	1.26	1.77
				K46	Tenement Living	0.62	0.80
				K47	Deprived View	0.36	0.50
				K48	Multicultural Towers	1.09	1.11
				K49	Re-Housed Migrants	0.97	0.99
L	Elderly Needs	4.04	5.96	L50	Pensioners in Blocks	0.89	1.31
				L51	Sheltered Seniors	0.67	1.12
				L52	Meals on Wheels	0.51	0.86
				L53	Low Spending Elders	1.98	2.68
M	Industrial Heritage	7.39	7.40	M54	Clocking Off	2.18	2.25
				M55	Backyard Regeneration	2.40	2.06
				M56	Small Wage Owners	2.81	3.09
N	Terraced Melting Pot	6.54	7.02	N57	Back-to-Back Basics	2.50	1.97
				N58	Asian Identities	1.06	0.88
				N59	Low-Key Starters	1.60	2.72
				N60	Global Fusion	1.38	1.44
O	Liberal Opinions	8.84	8.48	O61	Convivial Homeowners	1.74	1.68
				O62	Crash Pad Professionals	1.41	1.09
				O63	Urban Cool	1.25	1.10
				O64	Bright Young Things	1.36	1.52
				O65	Anti-Materialists	1.12	1.03
				O66	University Fringe	1.10	0.93
				O67	Study Buddies	0.87	1.14

(Source: Experian, 2009, p. 5)

The 28 NUTS 2 regions of the Alpine convention (state: 2016)

NUTS 2 Code	Name
DE21	Oberbayern
DE27	Schwaben
FRK2	Rhône-Alpes
FRL0	Provence-Alpes-Côte d'Azur
ITC1	Piemonte
ITC2	Valle d'Aosta/Vallée d'Aoste
ITC3	Liguria
ITC4	Lombardia
ITH1	Provincia Autonoma di Bolzano/Bozen
ITH2	Provincia Autonoma di Trento
ITH3	Veneto
ITH4	Friuli-Venezia Giulia
AT11	Burgenland
AT12	Niederösterreich
AT21	Kärnten
AT22	Steiermark
AT31	Oberösterreich
AT32	Salzburg
AT33	Tirol
AT34	Vorarlberg
SI03	Vzhodna Slovenija
SI04	Zahodna Slovenija
LI00	Liechtenstein
CH01	Région lémanique
CH02	Espace Mittelland
CH05	Ostschweiz
CH06	Zentralschweiz
CH07	Ticino

According to author. Link to data source:

[https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NU
TS_2016&StrLanguageCode=DE&IntPcKey=&StrLayoutCode=&IntCurrentPage=1](https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NU
TS_2016&StrLanguageCode=DE&IntPcKey=&StrLayoutCode=&IntCurrentPage=1)

The five NUTS 3 regions of Switzerland used in Figure 15

NUTS 3 Code	Name	In NUTS 2 region of
CH011	Vaud	Région lémanique
CH021	Bern	Espace Mittelland
CH055	St. Gallen	Ostschweiz
CH061	Luzern	Zentralschweiz
CH070	Ticino	Ticino

According to author. Link to data source:

<https://www.bfs.admin.ch/bfs/de/home/statistiken/volkswirtschaft/volkswirtschaftliche-gesamtrechnung/bruttoinlandprodukt-kanton.assetdetail.6369946.html>

Urban sprawl Data for the 28 NUTS 2 regions in 2009 used in Figure 17 and 18

NUTS 2 Code	TA [km2] (total area)	BA [km2] (built-up area)	WUP [UPU/m2]	UP [UPU/m2]	UD [Inh. and Jobs per km2]
DE21	17 529.35	1 655.58	4.07	4.29	3 847.23
DE27	9 991.30	818.21	3.22	3.59	3 078.06
FRK2	44 728.87	3 111.91	3.40	3.21	2 720.89
FRL0	31 681.79	1 742.33	2.55	2.54	3 751.25
ITC1	25 402.32	1 337.43	1.99	2.36	4 618.52
ITC2	3 261.48	38.65	0.37	0.51	4 740.65
ITC3	5 414.04	327.36	1.55	2.76	6 767.47
ITC4	23 876.69	2 652.05	4.30	5.13	5 201.02
ITH1	7 398.86	100.53	0.20	0.56	7 171.37
ITH2	6 206.23	159.90	0.85	1.12	4 574.27
ITH3	17 760.81	1 546.58	3.64	3.99	4 428.46
ITH4	7 725.48	383.20	1.86	2.21	4 456.15
AT11	3 964.82	189.12	1.56	1.98	1 970.26
AT12	19 196.81	986.96	2.06	2.24	2 207.30
AT21	9 542.27	271.87	1.25	1.28	2 873.41
AT22	16 409.80	558.76	1.60	1.56	3 052.19
AT31	11 988.26	556.94	2.13	2.14	3 642.22
AT32	7 161.10	180.18	0.94	1.12	4 315.44
AT33	12 647.65	254.03	0.75	0.89	4 012.71
AT34	2 602.12	109.46	1.74	1.94	4 761.87
SI03	12 214.46	422.77	1.50	1.56	3 418.13
SI04	8 062.36	382.93	2.08	2.15	3 588.70
LI00	160.38	20.07	6.06	5.80	3 255.27
CH01	8 375.27	428.30	2.02	2.34	4 865.87
CH02	10 060.06	613.44	2.44	2.74	4 127.15
CH05	11 351.06	443.54	1.62	1.75	3 630.61
CH06	4 483.05	228.87	1.85	2.28	4 750.78
CH07	2 811.60	144.10	2.36	2.34	3 272.21

NUTS 2 Code	LUP [m2 per Inh. or Job]	DIS [UPU/m2]	PBA [%]	Population	Number of workplaces
DE21	259.93	45.46	9.44	4 346 465	2 022 923
DE27	324.88	43.86	8.19	1 784 753	733 757
FRK2	367.53	46.08	6.96	6 230 691	2 236 467
FRL0	266.58	46.26	5.50	4 899 155	1 636 768
ITC1	216.52	44.90	5.26	4 446 230	1 730 693
ITC2	210.94	43.08	1.18	127 866	55 343
ITC3	147.77	45.67	6.05	1 615 986	599 381
ITC4	192.27	46.19	11.11	9 826 141	3 967 235
ITH1	139.44	41.45	1.36	503 434	217 535
ITH2	218.61	43.37	2.58	524 826	206 588
ITH3	225.81	45.77	8.71	4 912 438	1 936 539
ITH4	224.41	44.57	4.96	1 234 079	473 497
AT11	507.55	41.57	4.77	283 965	88 648
AT12	453.04	43.63	5.14	607 976	570 536
AT21	348.02	44.94	2.85	559 315	221 887
AT22	327.63	45.82	3.41	1 208 372	497 077
AT31	274.56	45.99	4.65	1 411 238	617 273
AT32	231.73	44.38	2.52	529 861	247 703
AT33	249.21	44.06	2.01	706 873	312 456
AT34	210.00	46.19	4.21	368 868	152 355
SI03	292.56	45.13	3.46	1 084 935	380 140
SI04	278.65	45.36	4.75	962 041	434 502
LI00	307.19	46.34	12.51	35 894	29 432
CH01	205.51	45.82	5.11	1 462 210	621 821
CH02	242.30	44.92	6.10	1 741 923	789 832
CH05	275.44	44.79	3.91	1 094 202	516 137
CH06	210.49	44.64	5.11	739 701	347 595
CH07	305.60	45.74	5.13	335 720	135 819

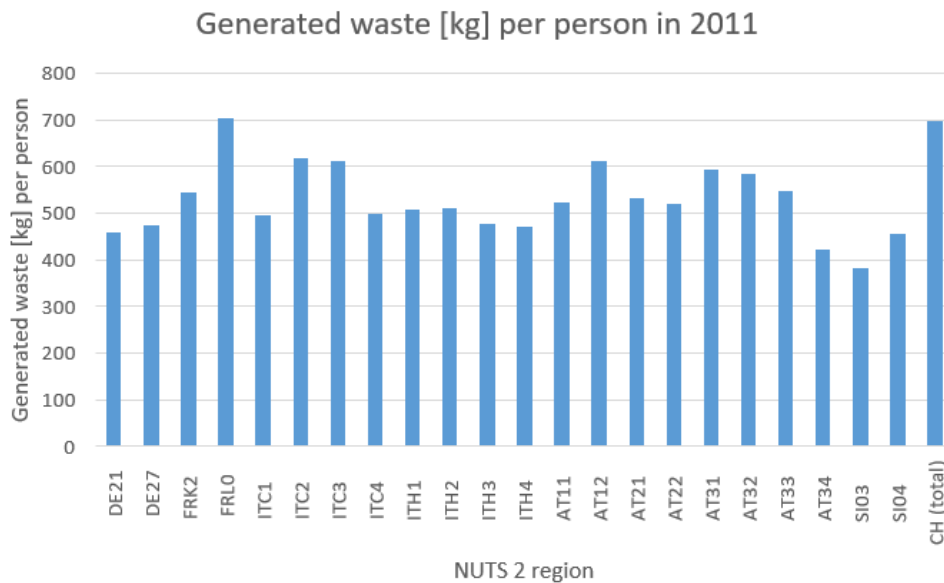
According to author (Data source: Hennig et al., 2016a)

Description of the most important variables listed in the table above

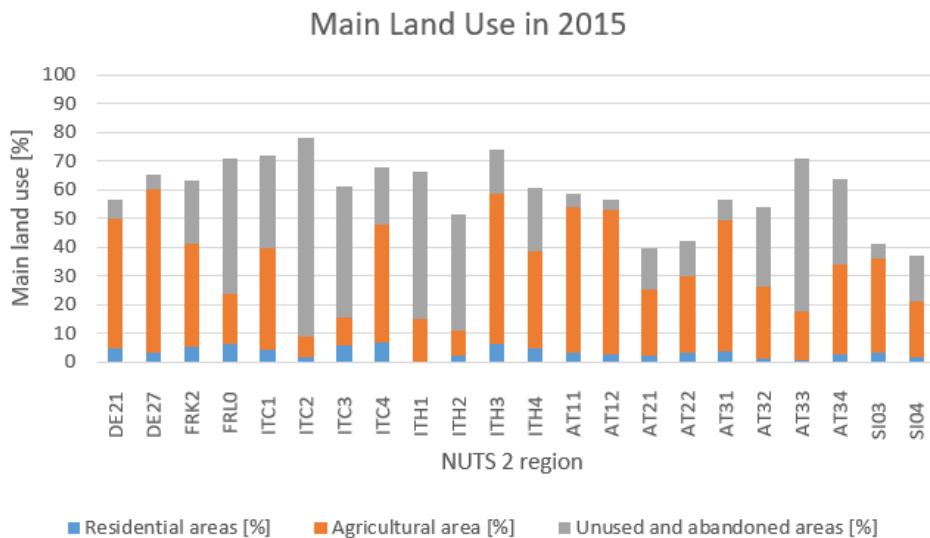
<i>WUP</i>	Weighted urban proliferation (<i>WUP</i>) is the metric used to quantify urban sprawl. It is the product of the dispersion (<i>DIS</i>), a weighting of <i>DIS</i> , the percentage of built-up area (<i>PBA</i>) and a weighting of the land uptake per person (<i>LUP</i>), that is land uptake per inhabitant or workplace. It is measured in urban permeation units (UPU) per square metre of landscape (UPU/m ²). The meanings of the ranges of low and high <i>WUP</i> values are explained in Table 2.1 (Section 2.2).
<i>PBA</i>	The percentage of built-up area (<i>PBA</i>) is the ratio of the size of the built-up areas to the size of the total area of the reporting unit and is given as a percentage.
<i>DIS</i>	The dispersion (<i>DIS</i>) quantifies the spatial distribution of built-up areas, expressed as UPU per m ² of built-up area (UPU/m ²). The further dispersed the built-up areas, the larger the value of <i>DIS</i> . Therefore, more compact built-up areas have lower values of <i>DIS</i> than less compact built-up areas.
<i>UP</i>	Urban permeation (<i>UP</i>) is a measure of the permeation of a landscape by built-up areas. It accounts for the <i>DIS</i> and the <i>PBA</i> in the reporting unit. It is measured in UPU per m ² of landscape.
<i>UD</i>	The metric of utilisation density (<i>UD</i>) measures the number of people working or living ($N_{inh+Jobs}$) in a built-up area (per km ²). Built-up areas with more workplaces and/or inhabitants are considered more intensively used, and hence less sprawled, than areas with a lower density of workplaces and/or inhabitants.
<i>LUP</i>	Instead of using the <i>UD</i> , the reciprocal can also be used, that is the area of land used per inhabitant or workplace (<i>LUP</i>). High <i>LUP</i> values indicate that more space is used per inhabitant or workplace than in areas of low <i>LUP</i> values.

Source: Hennig et al. (2016b, p. 13)

Further data on a NUTS 2 level – the collection is not complete; there are some NUTS 2 regions missing

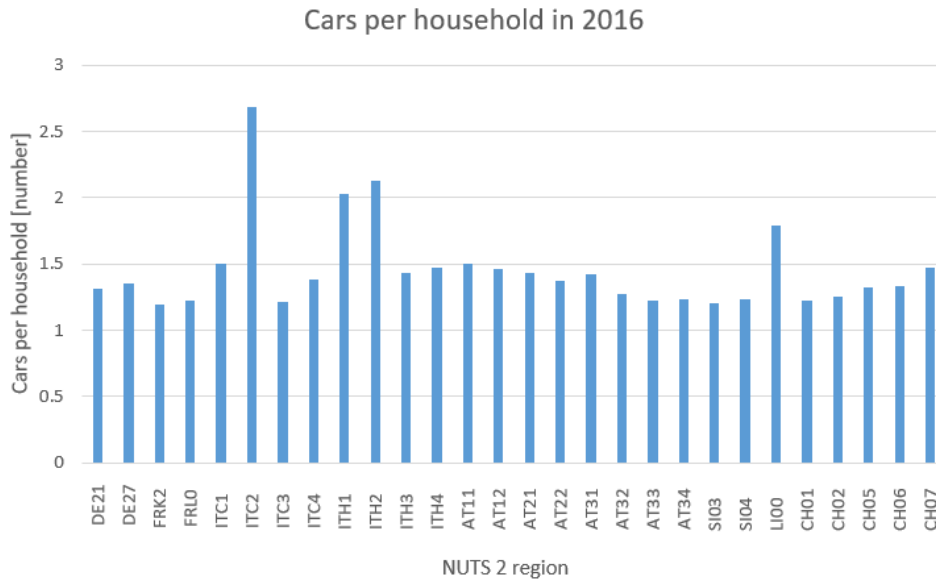


Data source: https://ec.europa.eu/eurostat/web/products-datasets/product?code=env_rwas_gen
 No data on NUTS 2 level for Switzerland; the data for Switzerland refers to the whole country.



Data source: https://ec.europa.eu/eurostat/web/products-datasets/product?code=lan_use_ovw
 No data available for Liechtenstein and Switzerland.
 Note: the terms “unused or abandoned” refer to the field visits and that land use is determined on the basis of visible signs of land use when surveyed.⁸

⁸ Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Land_use_statistics#Land_use



Data source: https://ec.europa.eu/eurostat/web/products-datasets/product?code=tran_r_vehst
 Note: in the calculation the average household size of 2.3 persons in 2017 was used.

Footprint and Biocapacity

Nation	Footprint per person [gha]	Biocapacity per person [gha]	Biocapacity
Germany	5.1	1.8	-3.3
France	4.7	2.7	-2
Italy	4.3	0.9	-3.4
Austria	5.9	3	-2.9
Slovenia	4.7	2.3	-2.4
Switzerland	4.9	1.1	-3.8

Data source: <http://data.footprintnetwork.org/#/>

No data available for Liechtenstein.

Note: the global hectare (gha) is a measurement unit for the ecological footprint of people or activities and the biocapacity on the earth or its regions.⁹ If the total biocapacity of a region (biocapacity = biocapacity per person – footprint per person) is negative the respective country has a biocapacity deficit. If the total biocapacity is positive the respective country has a biocapacity reserve.¹⁰

⁹Source: https://en.wikipedia.org/wiki/Global_hectare

¹⁰Source: <https://www.footprintnetwork.org/our-work/ecological-footprint/>