SWEET Call 1-2021: LANTERN

Deliverable report

Deliverable n°	3.5
Deliverable name	Persona Tool
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Delivery date	September 2024, revised version April 2025

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Summary

Encouraging sustainable behaviour change in the environmental sector is a challenging task, as undifferentiated measures (i.e. policies, products, services) that treat consumers all the same often make it difficult to adequately involve different social groups. Following the concept of social marketing, which emphasises the adaptation of policies, products and services to individual ways of living, the question arises which lifestyle types exist and how they can be addressed by target-group specific interventions. We therefore conducted a semi-systematic review of the literature on lifestyles of the last twenty years, examining relevant papers on topics such as mobility, housing or consumption for environmental behaviour and motivational factors. We developed six Personas on the basis of a recent representative Swiss survey on sustainability behaviour that identified six Sustainability Lifestyle Types and based on 13 segmentation studies from different Western countries. The use of Personas in a design process helps to establish a stronger user focus and allows to identify barriers that might hinder the support of the developed solutions or the transition process in general. Each of the developed Personas encapsulates unique patterns of behaviours, attitudes, and demographic attributes across key environmental domains, such as consumption, housing, and mobility. They serve as a practical tool for policymakers, researchers, and practitioners, providing them with a general basis that they can further develop and adjust to their specific use context. This enables a more targeted approach to designing effective solutions to reduce direct and indirect energy consumption.

1 Introduction

One of the main challenges regarding climate change and energy consumption lies in developing effective policies and communication strategies that foster meaningful and lasting behaviour change (Poortinga & Darnton, 2014). In particular, the general nature of policies often leads to suboptimal results, as only parts of the population are addressed adequately. This is in contrast to the social marketing approach, which suggests that policies are more likely to be effective and accepted if they are tailored to the lifestyle of the individual (Darnton, 2008; Corner & Randall, 2011). One effective approach to addressing this problem is the use of typologies, in which individuals are classified into categories based on certain characteristics or attributes. This approach provides a nuanced way to examine behaviours and underlying motivations, based on the premise that there is no “one size fits all”-solution to address people's practices, but that social groups can differ substantially in behaviour and underlying drivers (Babbie, 2020). Given the complexity of sustainability-relevant behaviours, classifying consumers according to more specific criteria than demographics is crucial, as demographic-based segmentations lack the predictive power to understand the varied intentions and behaviours of individuals (Onel et al., 2018). Various segmentations already exist in the environmental field, most of which focus on one specific area such as mobility, housing or living (e.g., Prillwitz & Barr, 2011; Thøgersen, 2017; Seidl et al., 2017) and only a few focus on more than one area (e.g., Sütterlin et al., 2024). However, the question remains as to how this information can be put into practical use. A method that has gained momentum in the last decades are Personas, introduced by Cooper (1999). Personas are abstractions of groups of real consumers who share common characteristics and needs (Pruitt & Adlin, 2006) and are used to simplify complex data by creating fictitious individuals who incorporate trends and patterns found in the data (Onel et al., 2018). This narrative approach helps to identify the needs of different groups of people and thus provides an orientation for the development of targeted intervention and communication campaigns (Cooper, 1999; Long, 2009; Ma & LeRouge, 2007). In particular Personas support co-creation processes such as Design Thinking in the early stages of the innovation process, as assumptions about future users must be made in these planning stages. Their use therefore enables more effective and efficient development and implementation of innovations (e.g. Nielsen, 2011; Plattner 2013) and provides a sense of 'concreteness' that is particularly beneficial in the environmental field (Carey et al., 2019), where complex results need to be translated into applicable innovations. The range of Personas that have already been created in the energy sector is broad, spanning topics such as retrofitting (Haines & Mitchell, 2014), sustainable consumption (Onel et al., 2018), but also the acceptance of renewable energy innovations (Torma & Aschemann-Witzel, 2024), and possible energy scenarios in the future (Sahakian et al., 2023). However, to our knowledge, there are no Personas that link environmental behaviour (i.e., different types of behaviour that are related to direct or indirect energy use) to attitudes and preferences in different areas of life, giving a comprehensive picture of different environmental perspectives.

To help researchers and practitioners visualize groups with different environmental perspectives, we created six personas. On the one hand, we based their creation on the segmentation literature on environmental behaviour and attitudes in different countries over the last 20 years. In a semi-systematic process, we identified the most important sustainability-relevant consumer types (in terms of (in)direct energy use, attitudes and beliefs) and grouped them according to their behavioural and attitudinal patterns. On the other hand, we drew on detailed data from a large-scale lifestyle segmentation study conducted in Switzerland as part of the SWEET SWICE WP1 project (Sütterlin et al., 2024), in which the authors examined different types of sustainability-relevant behaviour in different domains and settings and their underlying drivers. The six lifestyle types (in the following: Sustainability Lifestyle Types, SLT) resulting from the Swiss lifestyle study were then collated with the literature-based consumer groups. Findings that were only contained in either the Sustainability Lifestyle Types or the literature-based groups were added as complementary information. Doing so, six Personas emerged that differ in terms of their *socio-demographics*, their sustainability-relevant behaviour (incl. behaviour related to direct and indirect energy use) in the domains *housing, mobility, consumption and nutrition*, *work* and *agency* as well as their *beliefs*, *attitudes,* and *lifestyle preferences*. There is no full story for each Persona, as is usual when working with Personas in a specific design process, because on the

one hand the information provided is based solely on scientific findings and on the other hand the personas should be applicable in as many different scenarios as possible, which would be made more difficult by too many details. As the Personas were developed on the basis of existing typologies in the literature, they reflect the main social groups identified in different countries. However, due to the strong reference to the lifestyle study, which is representative for Switzerland, the Personas are directly applicable in the Swiss context. The whole research process as well as the design of the Persona factsheet was done in a co-creative manner within the LANTERN consortium, where inputs were collected regarding the information and the respective visualisation on the factsheets.

The aim of these Personas is to provide policymakers, researchers, and practitioners with a general information basis enabling them to establish a stronger user focus when designing new solutions and thus increase effectiveness of policies and applications in the environmental field. The Personas represent a general structure that can be used as a basis to create scenarios and support applications within a range of different topics and thus can be further elaborated for specific use cases (e.g., holiday and leisure activities, flexibility in energy consumption, etc.) to meet the required information content.

2 Deliverable content

2.1 Methodological Approach

The compilation of the personas is based on a two-pronged approach. On the one hand, a literature review was conducted to identify relevant segmentation studies, and, on the other hand, the development of the Persona's was strongly driven by insights and survey data of a recent Swiss lifestyle segmentation study. In a first step, we conducted a literature review to identify relevant studies on the segmentation of energy consumption, mobility, leisure activities, and work-related behaviours, with an emphasis on energy usage. Since the segmentation studies strongly differed in conceptualization, a semi-systematic review was applied, including a systematic analysis of relevant literature, but with some flexibility in the search and selection process. The search was conducted in the academic databases Scopus and Google Scholar, using keywords such as 'Persona', 'segmentation', 'lifestyles', 'energy behaviour', 'mobility', 'sustainability', 'environmental actions', 'housing', 'work', and 'leisure activities'. Furthermore, to cover all the relevant literature, we also applied a back-reference search and considered segmentation studies recommended by researchers from the LANTERN consortium. We restricted the search to papers no older than 20 years to ensure the current relevance of the segmentations. Due to the Swiss-specific focus of LANTERN, only papers from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) countries were considered, resulting in 21 relevant papers. The key findings and consumer segments from these studies were then compiled, followed by the identification of similarities and patterns across the different consumer groups. The assignment process, which focused on the analysis of behaviour and needs in different contexts and on various motivational factors, resulted in the exclusion of eight papers. These papers lacked sufficiently targeted information to allow a useful attribution to a specific group or focused solely on a specific subarea (e.g., preference for premium brands in clothing). Ultimately, the dataset included 13 papers covering the domains of living, housing, mobility and consumption (see Appendix E). Based on these studies, distinct groups of consumers were identified, with a particular focus on behaviours and preferences in the areas of mobility, housing, environmental measures and policy support. To gain further insights, motivational factors such as environmental attitudes, behavioural motives, preferences, norms and beliefs were also considered (see Appendix A for more details). The number of Personas was based on the extent to which the groups could be appropriately differentiated. However, in order to keep the Persona tool practical, the upper limit was set at eight different consumer groups and finally resulted in seven identified consumer groups.

Since no segmentation studies were detected that focused on work or leisure activities, nor studies that took a comprehensive perspective by assessing and differentiating behaviour types, domains and settings for the development of the Personas, we strongly relied on insights from a large lifestyle segmentation study that was recently conducted in Switzerland (Sütterlin et al., 2024). This study was realized as a part of WP1 (The human dimension of change) of the SWEET SWICE project and identified six Sustainability Lifestyle Types. The study assessed differences between lifestyle types in terms of

sustainability-relevant behaviour and underlying drivers. It covered a wide range of behaviours (sufficiency, efficiency/smart living, circular economy, policy support, environmental action, etc.) in different domains (housing, mobility, nutrition, consumption) and contexts (everyday life, work, leisure) as well as lifestyle preferences and psychosocial drivers. Since the SWEET SWICE WP1 Sustainability Lifestyle Typology addressed several of the key areas identified as focal points for the Personas in a differentiated and comprehensive manner, including areas that were not previously covered in the existing literature and enabling a cross-domain and -setting perspective (i.e., insights on whether the lifestyle types behave consistently across domains and contexts or whether they show more or less energy saving efforts in specific domains and contexts), it was used as the basis for the development of six Personas. The Sustainability Lifestyle Types were thus collated with the literature-based consumer groups in order to identify similarities and to close possible gaps. As expected, the results of other segmentation studies that focused only on specific behavioural domains were largely reflected in the Sustainability Lifestyle Typology, implying a certain robustness of the matching and justifying a strong alignment of the final personas with the six Sustainability Lifestyle Types. This strong reference to the SWICE WP1 Sustainability Lifestyle Typology study has the advantage that the description of the personas in terms of the cross-domain and cross-setting perspective is not based on assumptions, but on real data. It also has the advantage of increasing the applicability and accuracy of the personas for co-creation processes in Switzerland by reflecting the Swiss context.

The final Personas were then augmented by findings of the literature-based segmentation studies for which we had no information for the Sustainability Lifestyle Types (see Results section) and vice versa. Finally, we used all the gathered information to develop lively and expressive descriptions, complemented with useful information (e.g., prevalence) and visualizations resulting in a comprehensive picture of the Personas. The developed so called Sustainability Lifestyle Personas were described based on the behavioural domains of consumption, housing, mobility, food, work, policy support, and agency in relation to environmentally relevant behaviour, and energy use (see Appendix B).

The adjustments on the descriptions for every Persona was iteratively discussed with researchers from different disciplines within the LANTERN consortium. We furthermore presented the tool at a joint event of the ZHAW and the City of Winterthur, where we collected feedback on features that could be of particular interest to public authorities. Additionally, the Personas were subjected to a basic test carried out by WP9 to develop a use-case specific description to estimate CO_2 emissions within inbound alpine tourism. This proved to be a meaningful and helpful application of the tool (see Deliverable 9.1). In the future, we intend to collect experiences from further applications of the tool in different projects (within and outside LANTERN and SWICE) and to include suggested adjustments to improve the practicability of the tool. Following the submission of this Deliverable, the Sustainability Lifestyle Persona tool will be co-created further through case applications in selected settings within LANTERN, such as for example the WinLab (City of Winterthur) and Energy Living Lab Sion, with the aim of focusing the tool further for practical application in urban multi-stakeholder settings. Finally, the WP team will explore opportunities to utilise the tool in external settings, either in adjacent SWEET consortia, or international collaborations.

2.2 Results

We summarized the information collected on the consumer segments across different papers from different countries in six separate Persona profiles (see Appendix D). Each profile contains a name and a description of the Persona in order to draw a clear picture of the person at hand. The Persona descriptions are supplemented by information about socio-demographics, psychographic characteristics, and behaviour in individual environmental areas, namely Consumption and Nutrition, Housing, Mobility, Work and Agency (i.e. environmental action, and policy support and participation). We have deliberately not created a full story for each Persona to only include information that is actually scientifically substantiated in the literature and to provide space for LANTERN and SWICE work packages to adapt and/or expand the Personas regarding their areas of enquiry (see Deliverable D9.1 for an example of topic-specific Personas). A factsheet summarising the research process, describing the groups of people for whom the persona cards could be useful and suggestions on how to use the persona cards is available in the Appendix C.

The literature research and the SWEET SWICE Sustainability Lifestyle Typology (i.e. the SWEET SWICE WP1 survey results) do not cover precisely the same aspects. Instead, certain topics could only be examined on the basis of the Sustainability Lifestyle Typology, in particular behaviour at work, agency and policy support, conscious consumption, and the (in)consistency of behaviours across different types of behaviours, domains and settings. On the other hand, the literature of the last twenty years provides certain information that was not included in the Sustainability Lifestyle Typology. These are in particular pro-environmental attitudes, caretaking of family, green beliefs (e.g., “the earth has very limited room and resources”), and objective data on electricity use (the Sustainability Lifestyle Typology only includes self-reported data on electricity use). All information in this regard stems exclusively from the literature research and is partially included in the Persona cards. Exact details of the papers used can be found in the Appendix E.

Eco-Friendly Nikki
Nikki engages in pro-environmental efforts in terms of sufficiency and efficiency behaviour and is also willing to make financial sacrifices to support sustainability. She values simplicity and quality, but she is not very interested in technical solutions. While Nikki identifies strongly with the environment and scores high on altruistic and biospheric values, she is less involved in social and environmental activities.

Modest Billie
Billie leads a frugal life with little concern for social status or possessions. Although she believes in the impact of her actions, her environmentally relevant behaviour is somewhat inconsistent. She engages in moderate sufficiency and efficiency behaviour, but her food management is very considerate. Her mobility behaviour is rather reduced, and she spends a lot of time at home.

Focused Francis
Francis is very engaged in sustainability-relevant behaviour and optimises his environmental impact through use of innovative technologies, products, and services. He supports pro-environmental policies and is socially and environmentally active. Although he is very environmentally conscious, he often flies. Overall, he is motivated more by optimisation rather than pure idealism.

Budget-Conscious Kim
Kim is hedonistic and prioritizes personal pleasure and self-indulgence, while still maintaining a price-conscious attitude. She only partially believes that her actions have an impact and therefore her behaviour is not very environmentally friendly. Often, she chooses the most enticing option without considering the wider implications.

Techie Tony
Tony prioritises technological and innovative solutions and strives for a high social status. He is highly engaged in social and environmental initiatives, open-minded and willing to explore new mobility forms, nutrition or working practices. However, he is reluctant to adopt sufficiency behaviours.

Comfort-Oriented Gaby
Gaby shows little interest in environmentally relevant behaviour and does not see himself as an environmentally friendly person. He enjoys a high level of comfort and self-indulgence but is not open to new experiences and strongly opposes regulations that might affect his lifestyle. He does not believe in the effectiveness of pro-environmental actions and is barely involved in his neighbourhood.

Description of the persona regarding their environmentally relevant behaviours, attitudes, motives, preferences and orientations.

Insight into the thoughts of the Personas, fitting their characteristics.

Socio-demographic data: Gender, Household Size, Education, Age, Income, Residential Area (dots on the scale indicate the persona-specific tendency)

Spider diagram: Efficacy Beliefs, Pro-Environm. Identity, Hedonism, Social Status, Openness for new Experiences, Price Consciousness (coloured line indicates persona-specific characteristics, dotted line indicates average of all personas)

Estimated prevalence of the Persona in society

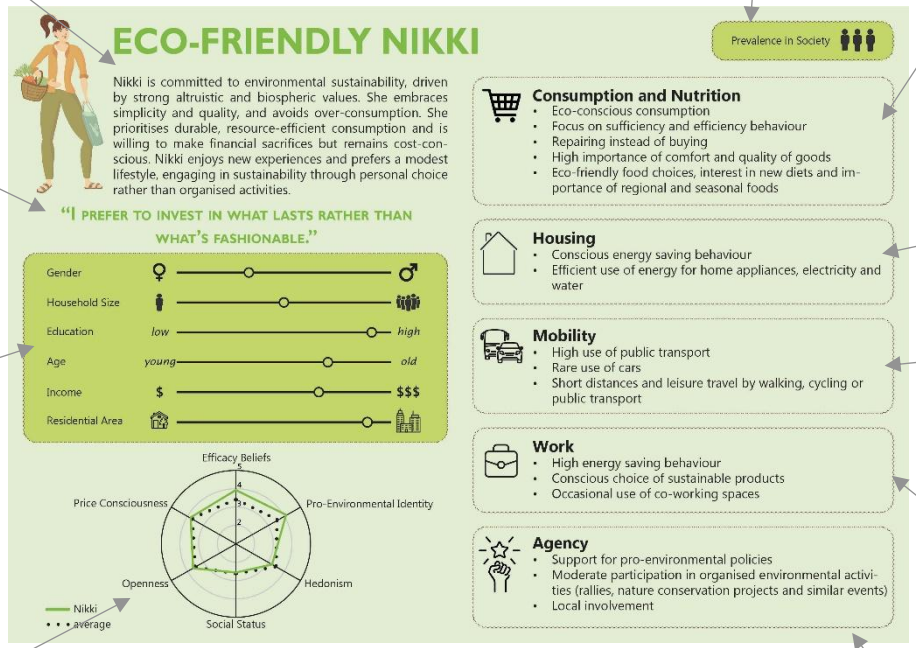
Characteristic behaviour and attitudes in the domain of general consumption and nutrition.

Characteristic behaviour and attitudes regarding housing and energy use at home.

Characteristic behaviour and attitudes regarding mobility.

Characteristic behaviour and attitudes regarding energy use at the workplace.

Characteristic behaviour and attitudes regarding social engagement and involvement.



3 Conclusion

In order to develop a literature-based Sustainability Lifestyle Persona tool, we conducted an in-depth analysis of the most recent segmentation studies that focused on behaviours and preferences in the domains of mobility, housing, environmental action, and policy support. Contexts of daily life, work, and leisure were specifically considered to gain a comprehensive understanding of consumer types. As the review of the literature revealed a scarcity of studies examining work or leisure activities or taking a comprehensive perspective by assessing and differentiating behaviour types, domains and settings, the development of the Personas was strongly oriented towards the data and insights of a lifestyle segmentation study recently conducted in Switzerland as a part of SWEET SWICE WP1 project that addressed several of the key areas and enabled a cross-domain and -setting perspective. This procedure also has the advantage that the description of the Personas regarding the cross-domain and -setting perspective does not rely on assumptions, but on real data, and that it increases the Persona's applicability and accuracy for co-creation processes in Switzerland by reflecting the Swiss context. Moreover, it offered an opportunity to benefit from the research conducted within other SWEET consortia by integrating their findings into our project. The findings and insights of the Sustainability Lifestyle Typology were compared with and complemented by the findings of the other segmentation studies. All this information was synthesized into six distinct Sustainability Lifestyle Personas, characterised by socio-demographic data, behavioural tendencies with regards to consumption and nutrition, housing, mobility, work, and agency (policy support, environmental action, and participation), as well as by their beliefs, attitudes and preferences. The result is a description of six multi-layered Sustainability Lifestyle Personas that can be used by policy makers, researchers, and practitioners to establish a stronger user focus when designing new solutions or interventions (A factsheet with suggestions on how to use the Persona cards and describing the groups of people for whom the Persona cards could be useful is available in Appendix C. The cards with the six Personas can be found in Appendix D). This approach has the potential to increase the effectiveness of policies and applications in the environmental field and has already been proven as a useful tool for the development of tourist profiles to estimate their travel-related CO_2 emissions. The Sustainability Lifestyle Personas are a newly developed tool that will be tested, further improved and validated during and beyond LANTERN and SWICE, both within the consortium's LL and potentially in adjacent SWEET consortia or other (international) projects.

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Appendix

A. Key elements searched for in reviewed studies

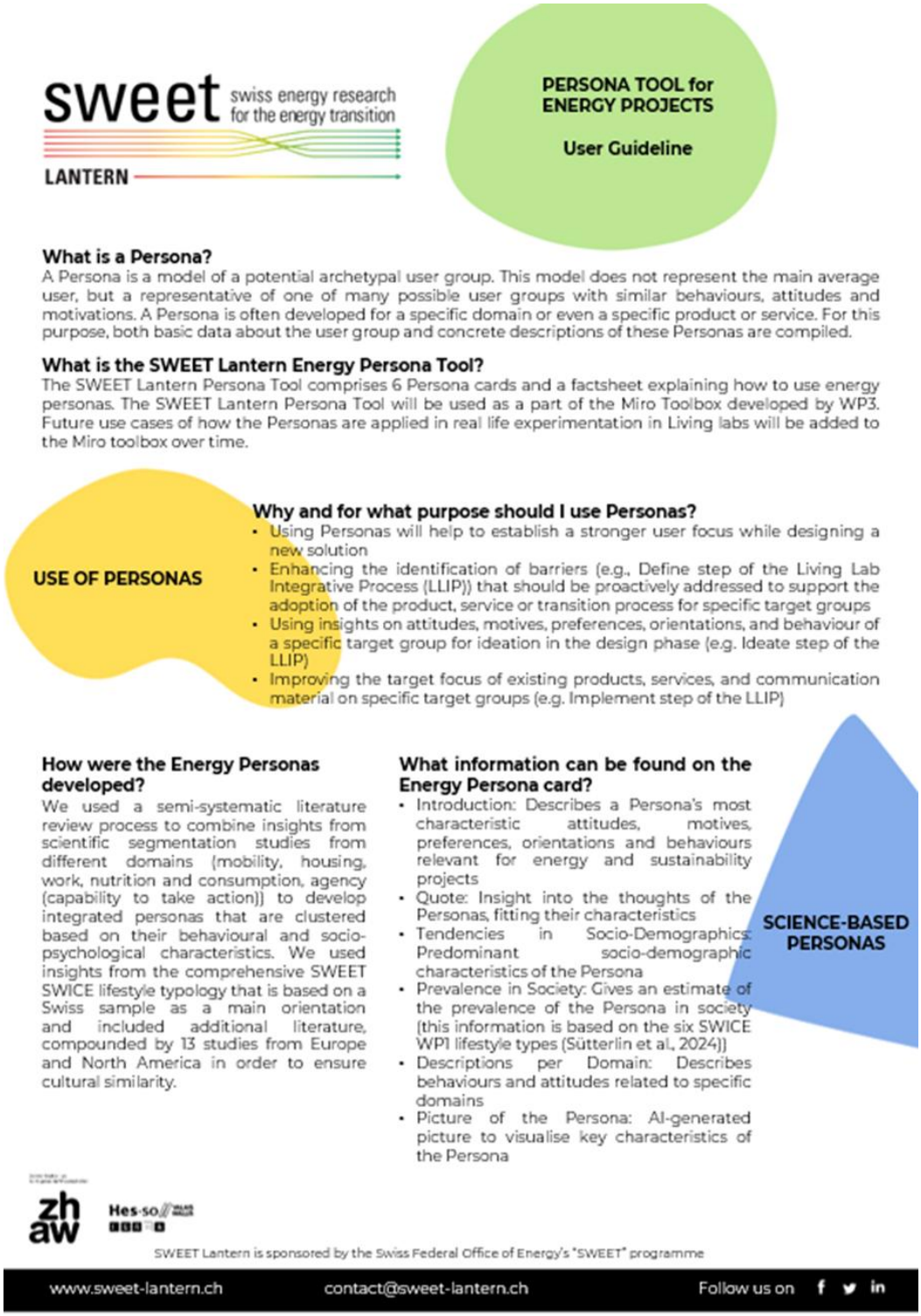
Item	Explanation
Persona / Name	Name that summarizes the characteristics of the Persona
Behaviour and needs, context living, working, leisure	
Mobility	Behaviour and needs regarding mobility (e.g. preferred mode of transport for commutes)
Building / Housing	Behaviour and needs regarding building/living (e.g., implementation of technologies within building)
Policy Support	Support of pro-environmental (push/pull) policies
Environmental actions	Willingness and actual implementation of environmental actions
Technology/Electricity Use	Willingness and actual implementation of new technologies; Level of electricity usage
Motivational Factors	
Environmentally relevant attitudes	Attitudes (e.g., pro-environmental attitudes, aversion to cars, utility of climate protection)
Behavioural motives, preferences, orientation	Motives to act such as preferences (e.g., comfort), behavioural characteristics (e.g., social), circumstances/drivers (e.g., finances)
Environmentally relevant Norms	Personal, social (e.g., environmentally conscious social group), cultural environmentally relevant norms
Environmentally relevant Beliefs & Values	Beliefs (e.g. efficacy beliefs) and values regarding environmental topics
Socio-demographics	
Living area	Differences in living area (urban/intermediate/rural, type of neighbourhood)
General interests (including leisure)	Additional interests including leisure activities
Gender, Marital Status, Children	Differences in gender, family situation
Others	Other socio-demographics (e.g. income, age, education)

B. Details on Profile Elements

Profile Element	Descriptions
Socio-demographics	Depict tendencies of Persona regarding the following socio-demographic elements: • Gender: Female/Male • Household Size: Single HH/Couple/Family • Education: No completed education/Compulsory school/…/Doctorate • Age: 25 years and younger/…/75 years and older • Income: Lowest percentile/…/Highest percentile • Residential Area: Rural/Intermediate/Urban
Consumption and Nutrition	• Level of consciousness of consumption • Preference for repairing/buying • Preference for comfort • Preference for high quality of goods • Interest in new forms of diets • Frequency of meat consumption
Housing	• Energy-saving efforts at home

	• Point in time of energy usage (peak-users, off-peak users) • Efficiency of used household appliances, electricity and water • Interest in smart appliances • Level of energy usage
Mobility	• Frequency of car use • Flight frequency • Preference for convenient mobility
Work	• Sustainable product choice • Energy-saving behaviour • Frequency of Co-Working/Home-Office
Agency	• Support of pro-environmental policies • Participation in activities for environment (Rallies, nature-preserving projects) • Openness to share goods and tools
Psychographics and other Preferences	• Efficacy beliefs with regard to environmental action (related to direct and indirect energy consumption) • Pro-Environmental Identity • Hedonism • Importance of social status • Openness for new experiences • Price consciousness

C. Factsheet: Energy Personas



sweet swiss energy research for the energy transition

LANTERN

PERSONA TOOL for ENERGY PROJECTS

User Guideline

What are examples of how to use of Personas?

- Identify barriers: Use a fictional interview setting with a Persona to unlock insights into specific barriers (e.g. in the needs-finding phase of a Design Thinking process)
- Develop use cases: Work in small groups and create for each Persona a use case for the product/service
- Develop an understanding of the user's needs: Brainstorm the persona's behaviours and thoughts when interacting with the product or service. From this, identify the underlying needs the persona may have

EXAMPLES ON USE OF PERSONAS

Example of a Workshop process to develop different use cases with the help of the Energy Personas

1. Voluntary, if needed: Add realistic (data-driven) characteristics to the 6 Personas regarding the specific domain at hand, based on the provided information of the Personas (e.g. intentions to use automated appliances in the household)
2. Participants: 6-18 participants, if possible from different disciplines, units, backgrounds
3. Introduction to the domain, the specific problem and possible solution pathways/product/services that you like to address during the workshop by moderator
4. Short presentation of the 6 Personas by moderator
5. Split into 6 groups, where each group is deepening the understanding of one Persona and tries to put themselves into the shoes of the Persona
6. Group work: Develop a realistic use case for your Persona: Identify their actions, explore feelings and emotions and define their needs in regard to the product, service, solution at hand (e.g. with the help of the empathy map or the value proposition canvas included in the Lantern LL toolbox developed in Deliverable 3.1)
7. Presentation of all use cases in plenary (including feedback from the whole group)
8. Voluntary: Identify those user groups that should be addressed by the solution/product (define criteria for this assessment)
9. Key insights: Identify 3-5 key insights from the workshop by an individual brainstorming on cards, followed by clustering the insights from the participants to derive the most important ones

PROS AND CONS

What are the specific Pros and Cons of the Energy Personas?

The Personas developed for energy projects have specific pros and cons compared to fictionally developed Personas. As scientifically based personas, these are developed on the basis of existing typologies reported in the literature. The Personas therefore reflect not only the social groups that are expected to be seen, but the major social groups that were identified in society by studies conducted in different countries. However, a fictional Persona can be described in a more detailed, comprehensive and engaging way. Furthermore, the fictional Personas often are more specific in terms of the actual target socio-technical practice.

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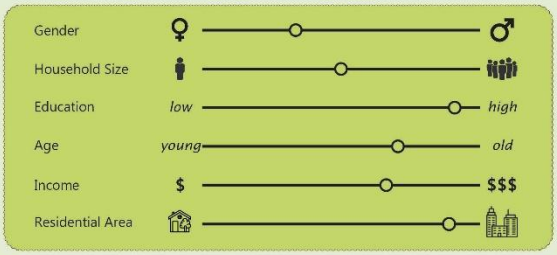
D. Persona Cards

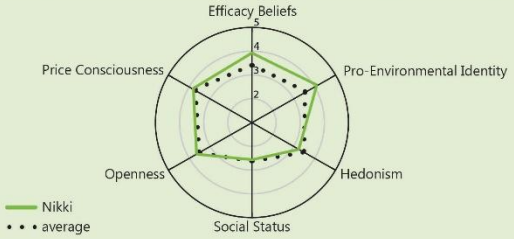
ECO-FRIENDLY NIKKI

Prevalence in Society

Nikki is committed to environmental sustainability, driven by strong altruistic and biospheric values. She embraces simplicity and quality, and avoids over-consumption. She prioritises durable, resource-efficient consumption and is willing to make financial sacrifices but remains cost-conscious. Nikki enjoys new experiences and prefers a modest lifestyle, engaging in sustainability through personal choice rather than organised activities.

"I PREFER TO INVEST IN WHAT LASTS RATHER THAN WHAT'S FASHIONABLE."





Consumption and Nutrition
- Eco-conscious consumption
- Focus on sufficiency and efficiency behaviour
- Repairing instead of buying
- High importance of comfort and quality of goods
- Eco-friendly food choices, interest in new diets and importance of regional and seasonal foods

Housing
- Conscious energy saving behaviour
- Efficient use of energy for home appliances, electricity and water

Mobility
- High use of public transport
- Rare use of cars
- Short distances and leisure travel by walking, cycling or public transport

Work
- High energy saving behaviour
- Conscious choice of sustainable products
- Occasional use of co-working spaces

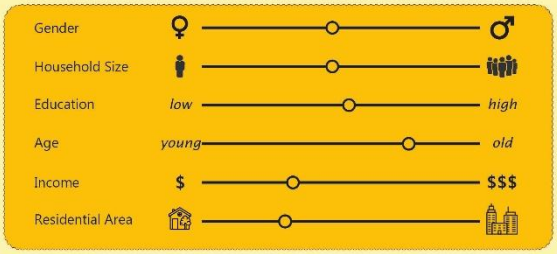
Agency
- Support for pro-environmental policies
- Moderate participation in organised environmental activities (rallies, nature conservation projects and similar events)
- Local involvement

MODEST BILLIE

Prevalence in Society

Billie lives a frugal life with little concern for social status, material possessions or self-indulgence. She values sustainability and believes her actions make a difference, but her environmental behaviour is inconsistent. While she is cautious of food waste and practises small energy-saving habits, her efforts in other areas remain moderate. Billie enjoys stability and routine and spends much of her time at home.

"MANAGING THINGS CAREFULLY FEELS LIKE THE RIGHT THING TO DO."



Consumption and Nutrition
- Moderate consciousness
- Moderate sufficiency behaviour
- Low meat consumption

Housing
- Average energy saving behaviour
- Moderately efficient use of energy for household appliances, electricity and water
- Low interest in technological solutions

Mobility
- Average use of all modes of transport
- Locally rooted
- Infrequent flyer

Work
- Relatively high energy saving behaviour
- Rare conscious choice of sustainable products
- Rare use of co-working spaces

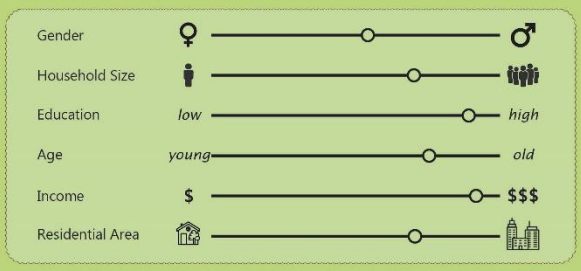
Agency
- Average support for pro-environmental policies
- Moderate participation in organised environmental activities (rallies, nature conservation projects)
- Reluctance to share (goods, tools and space)

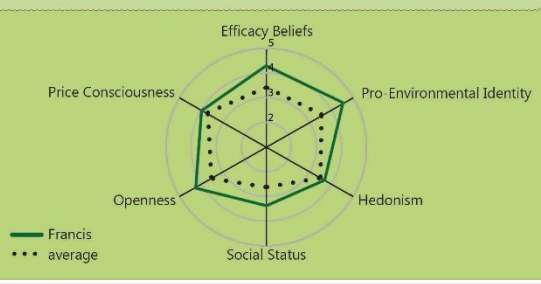
FOCUSED FRANCIS

Prevalence in Society

Francis is very committed to sustainability and optimises his impact through innovative technologies and behavioural choices. He actively supports environmental policies and participates in social and environmental initiatives. Although he is aware of the potential impact of his behaviour on the environment, he also values his social status and his own enjoyment and likes to discover new things, even if it means using an airplane.

"I DON'T JUST TALK ABOUT CHANGE; I MAKE IT HAPPEN, EVEN IF IT'S NOT ALWAYS PERFECT."





Consumption and Nutrition
- Highly conscious consumption
- Strong focus on sufficiency and efficiency behaviour
- Repairing instead of buying
- High importance of comfort and quality of goods
- Open to a variety of diets

Housing
- High energy saving behaviour
- Efficient use of energy for household appliances, electricity and water
- Regulation of energy use through smart appliances

Mobility
- High use of bicycles
- Rare use of cars
- Owner of E-car or hybrid car
- Short distances and leisure travel by walking, cycling or public transport
- Regular flyer

Work
- High energy saving behaviour
- Conscious choice of sustainable products
- High use of co-working spaces or home-office

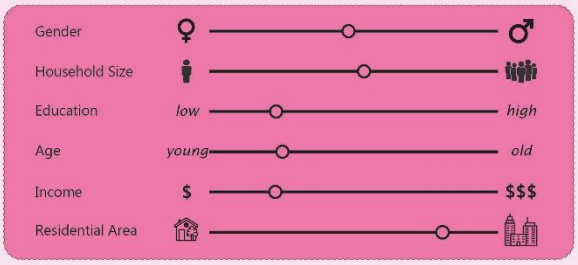
Agency
- Support for pro-environmental policies
- Frequent participation in organized environmental activities (rallies, nature conservation projects and similar events)
- Openness to sharing (goods, tools and rooms)
- Community-oriented

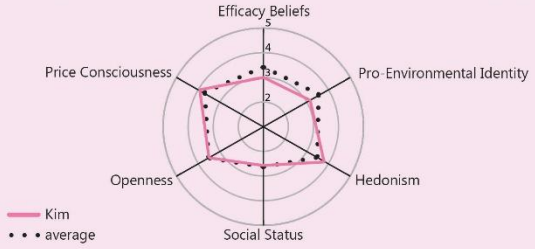
BUDGET-CONSCIOUS KIM

Prevalence in Society

Kim prioritises personal enjoyment and self-indulgence, although her spending is limited by budget constraints. She values her freedom of choice over social status and is sceptical about her individual impact on the environment. As a result, she rarely engages in pro-environmental behaviour and tends to choose the most attractive option without considering the wider consequences.

"ENJOYING LIFE MEANS CHOOSING WHAT FEELS RIGHT IN THE MOMENT, NOT WORRYING ABOUT TOMORROW."





Consumption and Nutrition
- Self-centred consumption
- High eagerness to consume
- Moderate importance of comfort and quality of goods
- Traditional food choices, indifference towards new diets and quality labels

Housing
- Moderate small-scale energy saving behaviour
- Inefficient use of energy for household appliances, electricity and water

Mobility
- Average use of all modes of transport
- No specific preference for one mode of transport
- Convenience-oriented mobility

Work
- Moderate to high energy saving behaviour
- Rarely conscious choice of sustainable products
- Rare use of co-working or home office

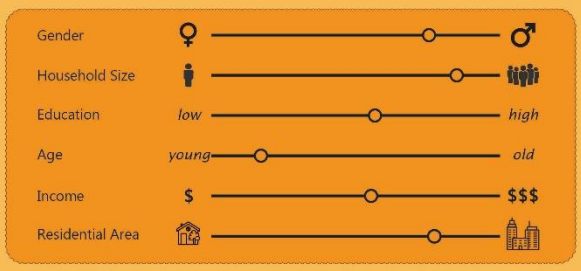
Agency
- Low support for pro-environmental policies
- Low participation in organised environmental activities (rallies, nature conservation projects and similar events)
- Detached from neighbourhood

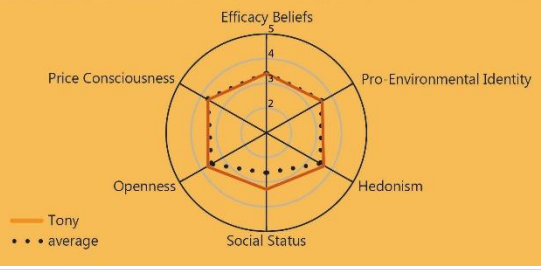
TECHIE TONY

Prevalence in Society

Tony is strongly involved in social and environmental initiatives and places great importance on his position in society. He is open-minded and curious but not fully convinced that he can personally make a positive impact on the environment. Therefore, he is keen to explore new mobility, nutrition, and work practices, but is reluctant to embrace sufficiency. Instead, he values innovation and efficiency over personal sacrifice.

"TRUE PROGRESS MEANS INTEGRATING NEW SOLUTIONS WITHOUT SACRIFICING OUR STANDARDS."





Consumption and Nutrition
- Inconsistent sufficiency behaviour
- Preference for technological solutions rather than avoidance of consumption
- High meat consumption but openness for a variety of diets

Housing
- High electricity use
- Low energy sufficiency behaviour
- Moderately efficient use of energy for household appliances, electricity and water
- Regulation of energy use through smart appliances

Mobility
- High use of all modes of transport
- Overall a lot on the move
- E-car or hybrid car owner
- Regular flyer

Work
- Large share still in education or training
- Moderate energy-saving behaviour
- High use of co-working spaces or home office

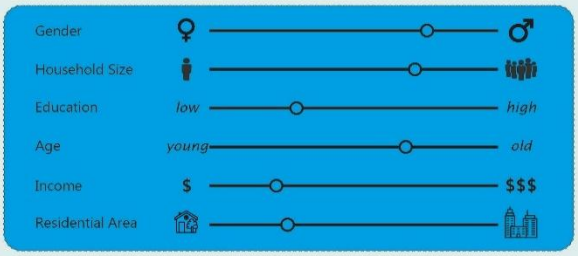
Agency
- Average support for pro-environmental policies
- Active participation in organised activities for the environment (rallies, nature conservation projects)
- Openness to sharing (goods, tools and rooms)

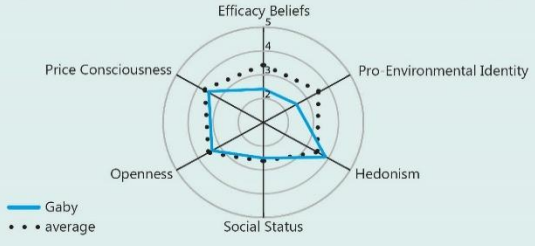
COMFORT-ORIENTED GABY

Prevalence in Society

Gaby values comfort, stability and personal freedom, preferring to live a self-contained life without regard to social status or trends. He is reluctant to new sustainable behaviours and opposes regulations that might affect his lifestyle. Unconvinced of his individual impact, he is minimally involved in pro-environmental or community activities.

"WHY WOULD I CHANGE MY LIFE WHEN IT'S ALREADY WORKING PERFECTLY FOR ME?"





Consumption and Nutrition
- Self-centred consumption
- Buying instead of repairing
- Traditional food choices, indifference to new diets and quality labels

Housing
- No efforts to save energy
- Peak-users of energy and high heating consumption
- Inefficient use of electricity, household appliances and water
- Low interest in smart appliances

Mobility
- High use of car for all activities
- Low use of other modes of transport
- Sporadic flyer

Work
- Low energy saving behaviour
- Low to no sustainable product choice
- Low use of co-working or home office

Agency
- Low support for pro-environmental policies
- Low participation in organised activities for the environment (rallies, nature conservation projects)

E. Sources of the different persona elements

Eco-friendly Nikki

Elements	***Reference***
Consumption and Nutrition	
Eco-conscious consumption	Axsen et al., 2012; Barr & Gilg, 2006; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011; Thøgersen, 2017; Sütterlin et al., 2024.
Focus on sufficiency and efficiency behaviour	Axsen et al., 2012; Barr & Gilg, 2006; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011; Thøgersen, 2017; Sütterlin et al., 2024.
Repairing instead of buying	Sütterlin et al., 2024.
High importance of comfort and quality of goods	Sütterlin et al., 2024.
Eco-friendly food choices, interest in new diets and importance of regional and seasonal foods	Sütterlin et al., 2024.
Building / Housing	
Conscious energy saving behaviour	Hughes & Moreno, 2013; Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Efficient use of energy for home appliances, electricity and water	Axsen et al., 2012; Hughes & Moreno, 2013; Sütterlin et al., 2024.
Mobility	
High use of public transport	Mihailova et al., 2022; Newton & Meyer, 2013; Ohnmacht et al., 2009; Seidl et al.,2017; Sütterlin et al., 2024.
Rare use of cars	Mihailova et al., 2022; Newton & Meyer, 2013; Ohnmacht et al., 2009; Prillwitz & Barr, 2011; Seidl et al., 2017 ; Sütterlin et al., 2024.
Short distances and leisure travel by walking, cycling or public transport	Prillwitz & Barr, 2011; Sütterlin et al., 2024.
Work	
High energy saving behaviour	Sütterlin et al., 2024.
Conscious choice of sustainable products	Sütterlin et al., 2024.
Occasional use of co-working spaces	Sütterlin et al., 2024.
Agency / Policy Support / Acceptance	
Support for pro-environmental policies	Sütterlin et al., 2024.
Moderate participation in organised environmental activities (rallies, nature conservation projects and similar events)	Sütterlin et al., 2024.

Local involvement	Mihailova et al., 2022; Sütterlin et al., 2024.
Motivational factors	
Openness to change	Axsen et al., 2012; Sütterlin et al., 2024.
High PEB attitudes	Axsen et al., 2012; Poortinga & Darnton, 2016.
High outcome-beliefs	Barr & Gilg, 2006; Sütterlin et al., 2024.
Moral motives -> altruistic, biospheric values	Barr & Gilg, 2006; Sütterlin et al., 2024.
Community-oriented	Mihailova et al., 2022; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Pro-environmental social group	Axsen et al., 2012; Sütterlin et al., 2024
Socio-demographics	
Mostly urban/suburbs	Mihailova et al., 2022; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Prillwitz & Barr, 2011; Sütterlin et al., 2024.
High education	Newton & Meyer, 2013; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Sütterlin et al., 2011.
Middle income to high income	Hughes & Moreno, 2013; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Sütterlin et al., 2011.
More women	Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011; Thøgersen, 2017; Sütterlin et al., 2024.
Family	Newton & Meyer, 2013; Poortinga & Darnton, 2016; Seidl et al., 2017; Thøgersen, 2017; Sütterlin et al., 2024.

Modest Billie

Elements	***Reference***
Consumption and Nutrition	
Moderate consciousness	Sütterlin et al., 2024.
Moderate sufficiency behaviour	Axsen et al., 2012; Barr & Gilg, 2006; Sütterlin et al., 2024.
Low meat consumption	Sütterlin et al., 2024.
Building / Housing	
Average energy saving behaviour	Axsen et al., 2012; Barr & Gilg, 2006; Bogin et al., 2021; Hughes & Moreno, 2013; Sütterlin et al., 2024.
Moderately efficient use of energy for household appliances, electricity and water	Axsen et al., 2012; Barr & Gilg, 2006; Bogin et al., 2021; Hughes & Moreno, 2013; Sütterlin et al., 2024.

Low interest in technological solutions	Axsen et al., 2012; Thøgersen, 2017; Sütterlin et al., 2024.
Mobility	
Average use of all modes of transport	Prillwitz & Barr, 2011; Sütterlin et al., 2024.
Locally rooted	Sütterlin et al., 2024.
Infrequent flyer	Sütterlin et al., 2024.
Work	
Relatively high energy saving behaviour	Sütterlin et al., 2024.
Rare conscious choice of sustainable products	Sütterlin et al., 2024.
Rare use of co-working spaces	Sütterlin et al., 2024.
Agency / Policy Support / Acceptance	
Average support for pro-environmental policies	Sütterlin et al., 2024.
Moderate participation in organised environmental activities (rallies, nature conservation projects)	Sütterlin et al., 2024.
Reluctance to share (goods, tools and space)	Sütterlin et al., 2024.
Motivational factors	
Low openness to change (liminality)	Axsen et al., 2012; Sütterlin et al., 2024.
Not particularly pro-environmental social group	Axsen et al., 2012.
Moderate environmental concern	Barr & Gilg, 2006; Hughes & Moreno, 2013. (?)
Socio-demographics	
Pensioners, slightly older	Bogin et al., 2021; Prillwitz & Barr, 2011; Thøgersen, 2017; Sütterlin et al., 2024.
Low to average income	Bogin et al., 2021; Prillwitz & Barr, 2011; Sütterlin et al., 2024.

Focused Francis

Elements	***Reference***
Consumption and Nutrition	
Highly conscious consumption	Poortinga & Darnton, 2016; Sütterlin et al.; 2011, Sütterlin et al., 2024.
Strong focus on sufficiency and efficiency behaviour	Axsen et al., 2012; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Sütterlin et al., 2011; Sütterlin et al., 2024.
Repairing instead of buying	Sütterlin et al., 2024.
High importance of comfort and quality of goods	Barr & Gilg, 2006; Sütterlin et al., 2024.
Open to a variety of diets	Sütterlin et al., 2024.

Building / Housing	
High energy saving behaviour	Poortinga & Darnton, 2016; Sütterlin et al., 2011; Sütterlin et al., 2024.
Efficient use of energy for household appliances, electricity and water	Sütterlin et al., 2024., Poortinga & Darnton, 2016.
Regulation of energy use through smart appliances	Axsen et al., 2012; Sütterlin et al., 2024.
Mobility	
High use of bicycles	Ohnmacht et al., 2009; Sütterlin et al., 2024.
Rare use of cars	Prillwitz & Barr, 2011; Sütterlin et al., 2024.
Owner of E-cars and hybrid cars	Axsen et al., 2012; Sütterlin et al., 2024.
Short distances and leisure travel by walking, cycling or public transport	Prillwitz & Barr, 2011; Sütterlin et al., 2024.
Regular flyer	Sütterlin et al., 2024.
Work	
High energy saving behaviour	Sütterlin et al., 2024.
Conscious choice of sustainable products	Sütterlin et al., 2024.
High use of co-working spaces or home-office	Sütterlin et al., 2024.
Agency / Policy Support / Acceptance	
Support for pro-environmental policies	Sütterlin et al., 2024.
Frequent participation in organized environmental activities (rallies, nature conservation projects and similar events)	Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Openness to sharing (goods, tools and rooms)	Sütterlin et al., 2024.
Community-oriented	Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Simpson & Radford, 2014; Sütterlin et al., 2024.
Motivational factors	
Social pressure to perform energy-saving behaviour	Sütterlin et al., 2011, Sütterlin et al., 2024.
Community-oriented, modern	Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Simpson & Radford, 2014. Sütterlin et al., 2024
Hedonic values (comfort and choice, enjoyment of life)	Mihailova et al., 2022; Sütterlin et al., 2011; Sütterlin et al., 2024.
Socio-demographics	
High education	Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011.; Sütterlin et al., 2024
High income	Hughes & Moreno, 2013; Mihailova et al., 2022; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Sütterlin et al., 2011; Sütterlin et al., 2024
Slightly older	Axsen et al., 2012; Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Not in deprived urban areas, urban	Poortinga & Darnton, 2016; Prillwitz & Barr, 2011; Sütterlin et al., 2024.

Budget-conscious Kim

Elements	***Reference***
Consumption and Nutrition	
Self-centered consumption	Barr & Gilg, 2006; Mihailova et al., 2022; Poortinga & Darnton, 2016; Seidl et al., 2017; Simpson & Radford, 2014; Sütterlin et al., 2011; Sütterlin et al., 2024
High eagerness to consume	Barr & Gilg, 2006; Mihailova et al., 2022; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011; Sütterlin et al., 2024.
Moderate importance of comfort and quality of goods	Barr & Gilg, 2006; Sütterlin et al., 2011; Sütterlin et al., 2024.
Traditional food choices, indifference towards new diets and quality labels	Sütterlin et al., 2024.
Building / Housing	
Moderate small-scale energy saving behaviour	Barr & Gilg, 2006; Mihailova et al., 2022; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011; Sütterlin et al., 2024.
Inefficient use of energy for household appliances, electricity and water	Barr & Gilg, 2006; Mihailova et al., 2022; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011; Sütterlin et al., 2024.
Mobility	
Average use of all modes of transport	Sütterlin et al., 2024.
No specific preference for one mode of transport	Sütterlin et al., 2024.
Convenience-oriented mobility	Simpson & Radford, 2014; Sütterlin et al., 2024.
Work	
Moderate to high energy saving behaviour	Sütterlin et al., 2024.
Rarely conscious choice of sustainable products	Sütterlin et al., 2024.
Rare use of co-working or home office	Sütterlin et al., 2024.
Agency / Policy Support / Acceptance	
Low support for pro-environmental policies	Sütterlin et al., 2011; Sütterlin et al., 2024.
Low participation in organised environmental activities (rallies, nature conservation projects and similar events)	Sütterlin et al., 2024.
Detached from neighbourhood	Sütterlin et al., 2024.
Motivational factors	
Self-enhancement	Poortinga & Darnton, 2016. (?)
Does not feel responsible for energy situation	Sütterlin et al., 2011; Sütterlin et al., 2024.
Low environmental concern	Barr & Gilg, 2006; Sütterlin et al., 2024.

Determines behaviour based on most appealing option (me first, then the world)	Newton & Meyer, 2013; Simpson & Radford, 2014; Sütterlin et al., 2024.
Socio-demographics	
Low or average education	Poortinga & Darnton, 2016; Sütterlin et al., 2024.
(single) men	Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Seidl et al., 2017; Sütterlin et al., 2011.
Young	Ohnmacht et al., 2009; Sütterlin et al., 2024.
Urban	Ohnmacht et al., 2009; Sütterlin et al., 2024.

Techie Tony

Elements	***Reference***
Consumption and Nutrition	
Inconsistent sufficiency behaviour	Axsen et al., 2012; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Simpson & Radford, 2014; Thøgersen, 2017; Sütterlin et al., 2024.
Preference for technological solutions rather than avoidance of consumption	Axsen et al., 2012; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Thøgersen, 2017; Sütterlin et al., 2024.
High meat consumption but openness for a variety of diets	Sütterlin et al., 2024.
Building / Housing	
High electricity use	Hughes & Moreno, 2013; Sütterlin et al., 2024
Low energy sufficiency behaviour	Axsen et al., 2012; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Simpson & Radford, 2014; Thøgersen, 2017; Sütterlin et al., 2024.
Moderately efficient use of energy for household appliances, electricity and water	Axsen et al., 2012; Ohnmacht et al., 2009; Poortinga & Darnton, 2016; Thøgersen, 2017; Sütterlin et al., 2024.
Regulation of energy use through smart appliances	Sütterlin et al., 2024.
Mobility	
High use of all modes of transport	Sütterlin et al., 2024.
Overall a lot on the move	Sütterlin et al., 2024.
E-car and hybrid car owner	Sütterlin et al., 2024.
Regular flyer	Sütterlin et al., 2024.
Work	
Large share still in education or training	Sütterlin et al., 2024.
Moderate energy-saving behaviour	Sütterlin et al., 2024.

High use of co-working spaces or home office	Sütterlin et al., 2024.
Agency / Policy Support / Acceptance	
Average support for pro-environmental policies	Sütterlin et al., 2024.
Active participation in organised activities for the environment (rallies, nature conservation projects)	Sütterlin et al., 2024.
Openness to sharing (goods, tools and rooms)	Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Motivational factors	
Openness to change	Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Green beliefs but only partly reflected in their actions	Hughes & Moreno, 2013; Sütterlin et al., 2024.
High living standard	Hughes & Moreno, 2013; Sütterlin et al., 2024
Socio-demographics	
More men	Ohnmacht et al., 2009; Thøgersen, 2017; Sütterlin et al., 2024.
might have children	Thøgersen, 2017; Sütterlin et al., 2024.

Comfort-oriented Gaby

Elements	***Reference***
Consumption and Nutrition	
Self-centred consumption	Hughes & Moreno, 2013; Poortinga & Darnton, 2016; Thøgersen, 2017; Sütterlin et al., 2024.
Buying instead of repairing	Sütterlin et al., 2024.
Traditional food choices, indifference to new diets and quality labels	Sütterlin et al., 2024.
Building / Housing	
No efforts to save energy	Axsen et al., 2012; Hughes & Moreno, 2013; Poortinga & Darnton, 2016; Thøgersen, 2017; Sütterlin et al., 2024.
Peak-users of energy and high heating consumption	Bogin et al., 2021; Hughes & Moreno, 2013; Sütterlin et al., 2024.
Inefficient use of electricity, household appliances and water	Axsen et al., 2012; Hughes & Moreno, 2013; Sütterlin et al., 2024.
Low interest in smart appliances	Axsen et al., 2012; Thøgersen, 2017; Sütterlin et al., 2024.
Mobility	
High use of car for all activities	Prillwitz & Barr, 2011; Thøgersen, 2017; Sütterlin et al., 2024.
Low use of other modes of transport	Prillwitz & Barr, 2011; Sütterlin et al., 2024.
Sporadic flyer	Sütterlin et al., 2024.
Work	

Low energy saving behaviour	Sütterlin et al., 2024.
Low to no sustainable product choice	Sütterlin et al., 2024.
Low use of co-working or home office	Sütterlin et al., 2024.
Agency / Policy Support / Acceptance	
Low support for pro-environmental policies	Sütterlin et al., 2011; Sütterlin et al., 2024.
Low participation in organised activities for the environment (rallies, nature conservation projects)	Sütterlin et al., 2024.
Motivational factors	
No innovativeness	Poortinga & Darnton, 2016; Thøgersen, 2017; Sütterlin et al., 2024.
Traditional	Poortinga & Darnton, 2016; Sütterlin et al., 2011.
Need/want to take care of family	Thøgersen, 2017.
No green beliefs	Hughes & Moreno, 2013; Poortinga & Darnton, 2016.
Socio-demographics	
Low to Middle income	Bogin et al., 2021; Hughes & Moreno, 2013; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Sütterlin et al., 2011; Sütterlin et al., 2024
Children	Bogin et al., 2021; Newton & Meyer, 2013; Poortinga & Darnton, 2016; Sütterlin et al., 2024.
Family life and privacy	Thøgersen, 2017; Sütterlin et al., 2024.