



# Just Paint a Picture? The Impact of Utopian Illustrations on Perceived Value Endorsement and Pro-Environmental Behavioural Intentions

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## Abstract

Research has found perceived biospheric group values (i.e., perceiving group members as caring for nature and the environment) to explain individuals' engagement in pro-environmental behaviour. However, most individuals believe that others endorse only weak biospheric values, while reporting to endorse strong biospheric values themselves. Thus, it seems necessary to find ways to correct the perceptions of others' biospheric values to motivate pro-environmental behaviour. The present study used an experimental design to investigate if viewing illustrations of Dutch people's utopias (i.e., desired societies) would change observers' perceptions of the biospheric values endorsed in Dutch society and thereby their intentions to behave pro-environmentally. Participants were randomly assigned to either of two experimental conditions presenting them with illustrations that did vs. did not reflect strong endorsement of biospheric values in Dutch society, or an active control condition. Participants in the final sample ( $N = 84$ ) were mostly young (i.e., 96% below 30 years), female (71%), and of Dutch nationality (62%). There were no significant differences between conditions in perceived biospheric value endorsement or pro-environmental behavioural intentions. Additionally, these two variables were not significantly associated. The association between biospheric value endorsement in the illustrations (i.e., experimental condition) and perceived biospheric value endorsement in Dutch society became significant when including perceived representativeness of the values endorsed in society as a moderator. Additional analyses revealed that non-Dutch participants perceived higher biospheric value endorsement in Dutch society than Dutch participants. Implications of the study's findings as well as its limitations and suggestions for further research are discussed.

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## **Just Paint a Picture? The Impact of Utopian Illustrations on Perceived Value Endorsement and Pro-Environmental Behavioural Intentions**

Increased engagement in pro-environmental behaviour is necessary to effectively mitigate climate change and other environmental issues (e.g., Intergovernmental Panel on Climate Change [IPCC], 2018). Given the current lack of engagement in pro-environmental behaviour, one may wonder whether this means that people do not care very much about nature and the environment. However, research findings suggest that most people endorse relatively strong biospheric values (i.e., they care quite a lot about nature and the environment; Bouman et al., 2021a; Bouman & Steg, 2019; Steg et al., 2014). This leads to the question of how the current lack of pro-environmental behaviour could instead be explained.

One explanation is that individuals' behaviour is also influenced by what they think others value. Research shows that people generally underestimate the extent to which others care about nature and the environment, and that this may indeed demotivate them from engaging in pro-environmental behaviour (Bouman et al., 2020, 2021a; Bouman & Steg, 2019). This underestimation of others' biospheric values often arises due to perceiving them as not engaging consistently in pro-environmental behaviour and because of negative portrayals of people in the media and public discourse. Additionally, people often do not explicitly talk to each other about their values, which can also make it difficult to know what others truly care about. This suggests that clearer communication on the values endorsed in society (i.e., concerning nature and the environment) may increase the extent to which people perceive others as endorsing biospheric values and thereby their motivation to engage in pro-environmental behaviour (Bouman & Steg, 2019, 2022). The present study investigates whether presenting individuals with illustrations of others' imagined ideal societies (i.e., utopias) is one strategy that can change their perceptions of the values endorsed in society as well as their pro-environmental behavioural intentions. Utopias may be useful for communicating about the values endorsed by others as they can be regarded as complex representations of those values (Fernando et al., 2020).

## **Basic Human Values**

Research has identified values as one of the theoretical constructs explaining individuals' engagement in pro-environmental behaviour (e.g., Bouman et al., 2021b; de Groot & Thøgersen, 2019). Values are defined as stable and general desirable life goals that transcend specific situations and guide individuals' attitudes, beliefs, and behaviour, with prioritised values being more likely to influence individuals (e.g., de Groot & Thøgersen, 2019). Schwartz (1992) distinguishes 56 different values that are found universally across countries and individuals; however, individuals differ according to which values they prioritise.

The present study will focus on *biospheric values* due to their strong relationship with pro-environmental behaviour (Bouman et al., 2020). Biospheric values are defined as a concern for nature and the environment for its own sake (de Groot & Thøgersen, 2019). As pro-environmental behaviour is "inherently beneficial for nature and the environment" (Bouman & Steg, 2019, p. 27), individuals with stronger biospheric values are more likely to engage in pro-environmental behaviour.

## **Biospheric Values and Pro-Environmental Behaviour: Empirical Findings**

As mentioned above, empirical research findings indicate that most people report to endorse relatively high biospheric values (Bouman et al., 2021a; Bouman & Steg, 2019; Steg et al., 2014), which leads to the question of why there is still insufficient engagement in pro-environmental behaviour to effectively address environmental issues such as climate change. Bouman and Steg (2022) have formulated four barriers explaining why strong biospheric values do not necessarily translate into high levels of pro-environmental behaviour: The first of these barriers relates to value conflicts: While pro-environmental behaviour benefits people's biospheric values, it may at the same time threaten other values of theirs (e.g., if they also value pleasure and comfort, and regard pro-environmental behaviour as effortful and inconvenient). Second, people may also fail to engage in pro-environmental behaviour because of knowledge deficits (i.e., concerning the environmental impact of their behaviour as well as the availability and implementation of behavioural

alternatives). Third, people also may not actively consider their values when making behavioural decisions, for instance when acting out of habit, following cultural traditions or due to situational characteristics (Bouman & Steg, 2022).

Fourth, perceiving others as not engaging in pro-environmental behaviour frequently, which may partially be explained by the three previously mentioned barriers, can lead to an underestimation of their biospheric values. People generally want to be accepted and liked by others, and therefore align their behaviour to what they think relevant others will approve of. Thus, believing that others do not care about the environment may demotivate them to engage in pro-environmental behaviour themselves due to the concern that others may disapprove of it (Bouman & Steg, 2022). Additionally, pro-environmental behaviour (e.g., saving energy, reducing one's waste) is commonly only effective in mitigating environmental problems such as climate change if adopted by a large number of people. Therefore, believing that others will not engage in pro-environmental behaviour may discourage people through making their own engagement appear ineffective (Bouman & Steg, 2022; Doherty & Webler, 2016; Thøgersen, 2014).

Indeed, previous research has found repeatedly that most people believe that they endorse biospheric values more strongly than others, and that others care more about things such as money, status, and their own pleasure and comfort (Bouman et al., 2020, 2021a; Bouman & Steg, 2019). Several explanations of this persistent finding have been offered (Bouman et al., 2021b): On the one hand, the discrepancy between most people reporting strong biospheric values for themselves but perceiving others as endorsing them only weakly could be explained by overreporting one's own biospheric values, especially given that being concerned with nature and the environment has generally come to be regarded as a socially desirable characteristic (Bergquist, 2020; Bouman et al., 2021b).

On the other hand, research suggests that underestimating others' biospheric values explains this discrepancy at least to some degree (Bouman et al., 2021b). The present study focuses on this line of reasoning as it provides opportunities for interventions. In addition to

individuals' engagement in pro-environmental behaviour not matching their biospheric values due to the barriers described above, negative portrayals of society in media and public discourse, which includes paying greater attention to unsustainable actions compared to pro-environmental behaviour, may also contribute to the underestimation of others' biospheric values (Bouman & Steg, 2019, 2022). Similarly, individuals themselves also tend to focus more on negative compared to positive events, so that things that are harmful stand out and will be remembered, whereas what is not harmful is easily taken for granted and forgotten (i.e., negativity bias; Rozin & Royzman, 2001). Furthermore, people usually do not talk explicitly about their values, which also makes it difficult to form a realistic impression of what others care about (Bouman et al., 2021b).

Hence, it seems necessary to find ways to communicate the values of others to people so that they may form more accurate perceptions thereof. This is especially relevant because based on the above reasoning, perceiving others as endorsing strong biospheric values may lead to increased motivation to engage in pro-environmental behaviour. Individuals' values can, for instance, be captured well in representations of their utopias (i.e., "desired possible worlds"; Fernando et al., 2018, p. 779; see also Fernando et al., 2020). In recent years, some evidence has emerged which suggests that engaging with utopias can increase individuals' motivation for behaviours that drive social change. This line of research is briefly discussed below, due to the expectation that presenting individuals with illustrations of others' utopias may also be a suitable way to communicate about the values endorsed in society.

### **The Effectiveness of Utopias in Inspiring Social Change**

Utopias and utopian thinking (i.e., the act of imagining utopias) are common in Western culture. There also is ample historical evidence suggesting that utopian visions have frequently inspired behaviours aimed at social change (Fernando et al., 2018, 2019, 2023). Besides, emerging empirical evidence suggests that utopian thinking has the potential to evoke social change motivation in the people engaging in it (Badaan et al., 2020; Fernando et al., 2018, 2020). It also shows that many people endorse visions of society where the



protection of nature and sustainability are highly valued (i.e., green utopias; Fernando et al., 2023). Moreover, presenting people with such green utopias has been found to evoke strivings to protect the natural environment, pro-environmental behavioural intentions, and actual pro-environmental behaviour in the form of charitable donations, if those utopias were evaluated positively. The green utopias were also appraised more positively (e.g., in terms of warmth or positive emotions compared to visions of society focusing more on science and technological progress (Fernando et al., 2020). Taken together, these results by Fernando et al. (2020, 2023) may be regarded as further evidence of people generally endorsing relatively high biospheric values in addition to what has been mentioned above.

Combining the previously mentioned reasonings of utopias being complex representations of people's values (Fernando et al., 2020) and the likelihood of people engaging in pro-environmental behaviour being influenced by not only their individual but also their perceived group values (Bouman et al., 2020, 2021a; Bouman & Steg, 2019), this study investigates whether viewing illustrations of others' utopian visions can influence observers' perceptions of the values endorsed in society and thereby their behaviour. Utopian visions of society may be particularly suitable for communicating the degree to which people care about nature and the environment as they can be free from the barriers to pro-environmental behaviour present in reality (see above). Specifically, the present study examines the impact of the illustrations created by the so-called "Youtopialab" initiative, which will be briefly presented in the following.

### **The Present Study**

One initiative aiming to make individuals' values more publicly visible through presenting their utopian visions to the public is Youtopialab, a collective of volunteers who since 2019 have interviewed around 100 Dutch citizens about their dream future countries (youtopialab, n.d.). More specifically, they used semi-structured interviews that consisted of 15 questions instructing the interviewees to develop their dream countries step by step. No limits were set to the interviewees' imagination, so their dream countries could include anything they wished for, and even supernatural elements (den Boer, 2023). In a next step,

professional illustrators created illustrations (so-called *youtopias*) based on the interviews and the values they perceived the interviewees to endorse (youtopialab, n.d.). These illustrations distinguish between eight different values (e.g., connection, conservation, innovation), each of them being depicted by a different colour. For instance, the amount of green colour in the illustrations stands for the extent to which the illustrators perceived the interviewees to endorse biospheric values. The illustrations have recently been showcased at several exhibitions across the Netherlands.

Previous empirical research on the impact of the Youtopia tool (i.e., the combination of the interviews and the illustrations) has focused on its effects on the interviewees. It showed that the interview motivated them to behave according to their prioritised values, probably because it made them actively think about their values (den Boer, 2023). This is also in line with the research findings concerning the effectiveness of utopian thinking in evoking social change motivation mentioned previously. Following this, the present study will investigate whether the Youtopia tool can also affect individuals' perceptions of the biospheric values endorsed in Dutch society, and thereby motivate them to behave pro-environmentally through presenting them with the illustrations. This is based on the expectation that observing what others truly value and therefore include in their *youtopias* can change observers' perceptions of the values endorsed in society. Additionally, it is expected that changing individuals' perception of the extent to which others care about nature and the environment will motivate them to engage in pro-environmental behaviour. This is because they will then think that others will approve of their pro-environmental behaviour, and that many people are likely to engage in it, which would result in their own engagement being effective.

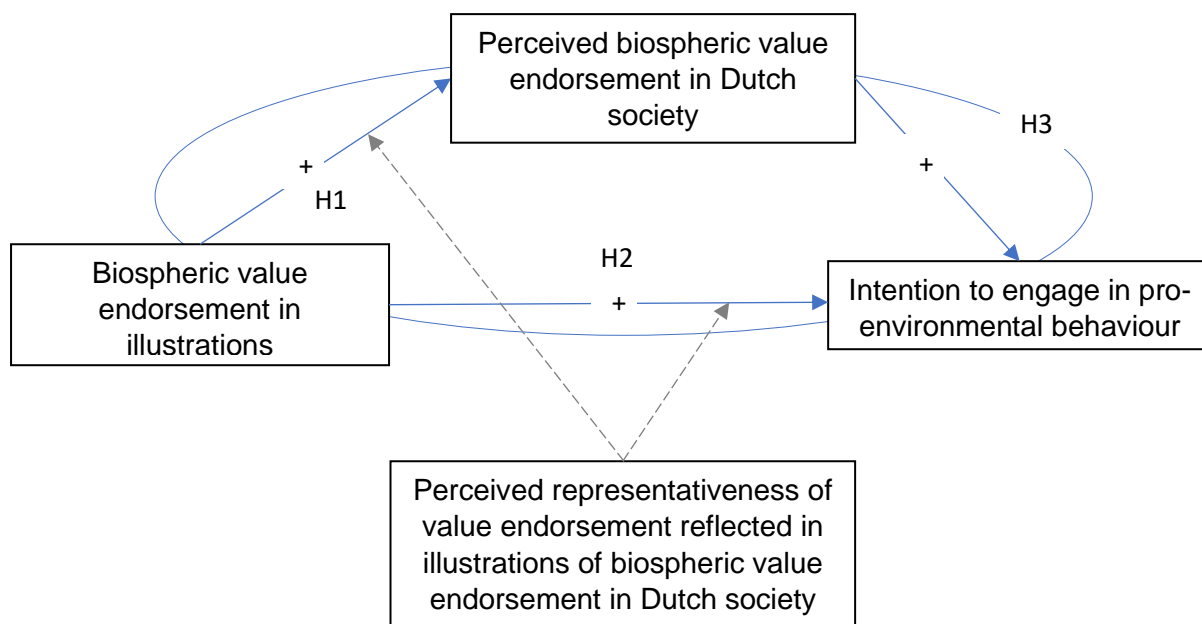
The present study will use an experimental design to investigate the above-mentioned research question. There will be two experimental conditions and one active control condition. The experimental conditions will differ regarding the extent to which the presented illustrations reflect biospheric value endorsement by the interviewees on whom they are based. Specifically, there will be one condition in which all illustrations indicate high

endorsement of biospheric values by the interviewees (green condition) and one in which they indicate low endorsement of biospheric values (non-green condition). Participants in the control condition will not observe any illustrations, but instead think about what the youtopia of an average Dutch person would look like. The outcome variables of the present study are the perceived endorsement of biospheric values in society and the intention to engage in pro-environmental behaviour in the next year.

Based on the research findings and theoretical reasoning stated above, the present study will examine the following hypotheses (see also Figure 1):

- 1) Participants in the green condition will perceive stronger endorsement of biospheric values in Dutch society than participants in the non-green or the control condition, respectively.
- 2) Participants in the green condition will be more motivated to engage in pro-environmental behaviour than participants in the non-green or the control condition, respectively.
- 3) Perceived biospheric value endorsement in Dutch society mediates the effect of biospheric value endorsement in the presented illustrations (i.e., study condition) on participants' intentions to engage in pro-environmental behaviour.

Besides, the present study will explore whether the extent to which the endorsement of biospheric values reflected in the presented illustrations is perceived as representative of the values endorsed in Dutch society (in the following *perceived representativeness*) moderates the association of biospheric value endorsement in the illustrations with a) perceived biospheric value endorsement in Dutch society and b) the intention to engage in pro-environmental behaviour, respectively. These associations are expected to be stronger for higher perceived representativeness.

**Figure 1***Visualisation of Study Hypotheses*

## Method

### Participants

An a priori power analysis was conducted with G\*Power version 3.1.9.6 (Faul et al., 2007). A sample size of  $N = 159$  would be required to find a medium-sized effect ( $f = 0.25$ ) for the first two hypotheses with a power of  $\beta = .80$ . Additionally, a sample size of  $N = 55$  would be required to find a medium-sized effect for Hypothesis 3.

The study was completed by 100 participants. Data collection was terminated before reaching the desired sample size due to time constraints of finalising the master's thesis project. Most participants (76%) in the final sample were first-year psychology students recruited through the SONA system of the University of Groningen. This system enables students to sign up for research studies to receive course credit. The remaining 24% were recruited through convenience sampling among personal contacts.

All participants completing the study initially consented to the processing of their answers and personal data. However, one participant withdrew their consent after the

debriefing. Additionally, six participants were excluded who did not pass the attention check and one participant because of indicating that they did not fill in the survey conscientiously so that their data should not be used. See below for further information on the debriefing and attention check. Beyond that, eight participants were excluded because they took less than 5 minutes to complete the study, which was considered the minimum duration necessary to fill in the survey conscientiously. Thus, the final sample used for the statistical analyses included  $N = 84$  participants, who were evenly distributed across the three conditions ( $n = 28$  for the green condition,  $n = 29$  for the non-green condition, and  $n = 27$  for the control condition). As the necessary sample size for a power of  $\beta = .80$  was not achieved, an a posteriori power analysis was conducted for Hypotheses 1 and 2. According to it, the study had a power of  $\beta = .51$  to detect a medium-sized effect.

Participants in the final sample were relatively young, with 86% being younger than 25 years, 11% being between 26 and 29 years old, and only 4% being 30 years or older. Besides, the majority of participants (71%) was female (25% male, 4% other or prefer not to say), of Dutch nationality (62%), and proficient in Dutch (70%). Finally, most participants (94%) had not heard of the Youtopialab initiative prior to participating in the study.

## **Procedure**

The study was reviewed and approved by the Ethics Committee of the Faculty of Behavioural and Social Sciences of the University of Groningen (research code PSY-2324-S-0265). Data for this study was collected through the Qualtrics online survey platform. The survey began with providing some relevant information about the research such as its purpose, what would be required of the participants, the consequences of participation, how the data would be processed, etc. Participants also received contact email addresses in case of any further questions at this stage. They were then asked to indicate their consent to participating in the study based on the provided information. Additionally, SONA participants were also asked to consent to the processing of their personal data because their unique SONA ID (i.e., through which they could be identified) had to be collected for granting them their course credit.

Next followed the experimental manipulation, for which participants were randomly assigned to either of the two experimental conditions or the control condition. See below for a detailed description of this experimental manipulation. After it, perceived value endorsement in Dutch society and intentions to engage in pro-environmental behaviour were assessed for all conditions. An attention check item was also included within the list of perceived value endorsement items. Additionally, environmental self-identity was assessed for potential additional analyses and perceived representativeness was assessed for participants in the experimental conditions. Demographic variables and pre-existing familiarity with the Youtopialab initiative prior to participating in the study were then assessed for all participants.

After answering all items, participants were debriefed about the study's research question, hypotheses, and the differences between the conditions. It was also made clear that they had been deceived in being told that the interviewees whose illustrations they had viewed were representative of the general Dutch population. After this debriefing, participants were asked to indicate whether they still consented to the processing of their data. They then had the opportunity to provide any comments they had about the study, the Youtopialab initiative, the illustrations, etc. via an open text box. Finally, participants were asked if they had filled in the survey carefully so that their data could be used for the analyses. The survey then ended with thanking them for their participation. See Appendix A for screenshots of the Qualtrics survey.

### **Experimental Manipulation**

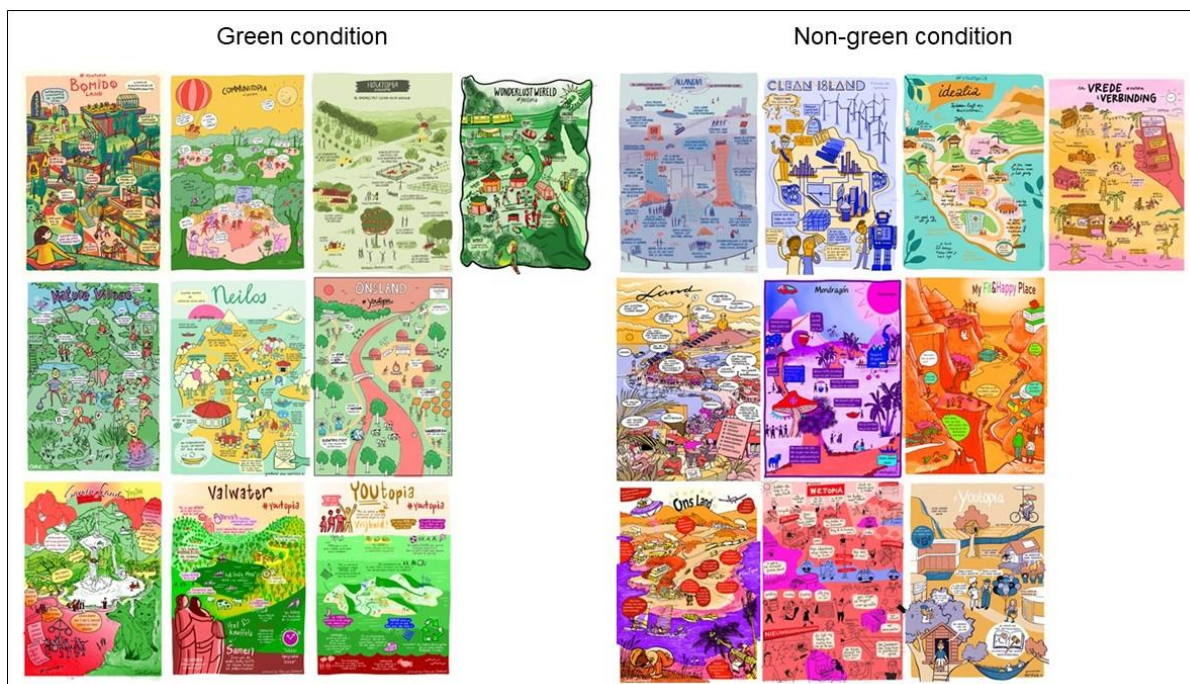
The study contained two experimental conditions (labelled the "green" and the "non-green" condition, respectively) and one active control condition. Participants in all three conditions first read a short text introducing the Youtopialab initiative, including a legend explaining what the different colours in the illustrations stand for (see Appendix A). After that, participants in the two experimental conditions viewed 10 illustrations from Youtopialab (i.e., youtopias). In the green condition, the presented illustrations were predominantly green, thus reflecting high endorsement of biospheric values by the interviewees. The illustrations

presented in the non-green condition, on the other hand, contained very little green, reflecting lower endorsement of biospheric values.

Participants first viewed the illustrations individually and were subsequently presented with an overview of all 10 illustrations (see Figure 2), along with the same legend about the use of colours they had already seen previously. Simultaneously, they were asked to note down their impressions of what the interviewees whose illustrations they had viewed particularly cared about. A list of the individual illustrations presented to participants can be found in Appendix B. In both experimental conditions, participants were deceived by telling them that the interviewees whose illustrations they were going to view were representative of the general Dutch population. In the control condition, participants did not view any illustrations, but were instead asked to describe what the youtopia of a typical Dutch person would look like in their opinion.

**Figure 2**

*Youtopialab Illustrations Used for the Experimental Manipulation*



## Measures

This section provides a detailed description of the relevant variables in the context of this study (i.e., which were used in the statistical analyses). All items used to assess these variables can be found in Appendix A.

### *Hypotheses-Related Variables*

**Perceived Biospheric Values.** Perceived biospheric value endorsement in Dutch society was assessed with one item adapted from the Portrait Value Questionnaire (PVQ; Schwartz et al., 2012) and one item adapted from the Environmental Portrait Questionnaire (E-PVQ; Bouman et al., 2018). The original scales present participants with short descriptions of fictitious persons, asking them to indicate how similar each of those persons is to themselves. However, in this study participants instead had to indicate the extent to which they think each of the described persons is like a typical Dutch citizen on a 6-point scale containing the answer options 1 = *Not at all like an average Dutch citizen*, 2 = *Not like an average Dutch citizen*, 3 = *A little like an average Dutch citizen*, 4 = *Somewhat like an average Dutch citizen*, 5 = *Like an average Dutch citizen*, and 6 = *Very much like an average Dutch citizen*. Specifically, the two items were “It’s important to this person to protect the environment. This person strongly believes that people should care for nature.” and “It’s important to this person to respect nature. This person wants to feel connected with nature.”. The reliability of this scale was calculated as the non-parametrical correlation between the two items and was satisfactory at  $r = .81$ .

The two biospheric values items were presented together with the remaining 20 items of the PVQ. The reasons behind including these items were, on the one hand, to enable comparisons between previously collected data and the data from this study, as the PVQ also had been used to assess the values of the interviewees through self-report and through other-report by the interviewers and illustrators as part of the Youtopia tool (den Boer, 2023). On the other hand, administering the full PVQ also served the purpose of making the study hypotheses less obvious to participants.



**Pro-Environmental Behavioural Intentions.** The study assessed participants' intentions to engage in different types of pro-environmental behaviour, namely individual and collective pro-environmental behaviour as well as environmental policy support. First, intentions to engage in individual pro-environmental behaviour were assessed by asking participants how often they were planning to engage in each of seven different behaviours in the next year, using a 7-point scale with the answer options 1 = *Never*, 2 = *Rarely*, 3 = *Occasionally*, 4 = *Somewhat often*, 5 = *Often*, 6 = *Very often*, and 7 = *Always*. The items were chosen with the aim to include behaviours that could easily be performed by students and young people due to the expectation that they would represent the majority of the sample. An example item is "Eat a vegetarian/vegan meal".

Second, intentions to engage in collective pro-environmental behaviour were assessed by asking participants how likely they were to engage in each of three different behaviours in the next year, namely "sign a petition", "protests, public demonstrations, sit-ins, strikes or rallies", and "encourage other people to act environmentally friendly". These items were answered on a 7-point scale (1 = *Not at all likely*, 2 = *Not likely*, 3 = *Somewhat unlikely*, 4 = *Neutral*, 5 = *Somewhat likely*, 6 = *Likely*, 7 = *Very likely*).

Third, to assess environmental policy support, participants were presented with six different policies concerning a range of environmental issues. They indicated their opinions on those policies on a 7-point-scale ranging from 1 = *Strongly opposed* to 7 = *Strongly in favour*. An example item is "Using public money to subsidize renewable energy such as wind and solar power". The three separate scales showed satisfactory reliabilities for the intentions to engage in individual ( $\alpha = .71$ ) and collective ( $\alpha = .77$ ) pro-environmental behaviour as well as environmental policy support ( $\alpha = .85$ ).

### ***Additional Variables***

**Perceived Representativeness of Value Endorsement in Illustrations.** One item was used to assess perceived representativeness. This item was formulated as follows: "Please indicate if you think that the things the people whose youtopias you have seen care

about are representative of what Dutch people in general care about.” It was answered on a 7-point scale (1 = *Not at all representative*, 2 = *Not representative*, 3 = *Rather not representative*, 4 = *Neutral*, 5 = *Rather representative*, 6 = *Representative*, 7 = *Very representative*).

**Demographic Variables.** The demographic variables assessed in this study include age, gender, nationality, and Dutch proficiency. First, participants provided their age by indicating which of six age groups they belonged to (i.e., 18-25 years, 26-29 years, 30-39 years, ..., 60 years or older). Second, participants indicated their gender by selecting from four answer options (i.e., “woman”, “man”, “other”, and “prefer not to say”). Third, participants indicated whether they were of Dutch or another nationality. This variable was included to allow for analysing potential differences between Dutch and other participants in their perceptions of the values endorsed in Dutch society and thereby on related variables. Fourth, participants indicated whether or not they were proficient in Dutch. The reason for including this variable was that the Youtopialab illustrations frequently include textual elements in Dutch. Thus, assessing Dutch proficiency was deemed useful to analysing whether it had an effect on participants’ impressions of the illustrations and thereby the relevant variables in this study.

**Familiarity with Youtopialab.** Finally, participants were asked whether or not they had already heard of the Youtopialab initiative prior to participating in the study as this could also impact the assessed variables. They could choose from three answer options, namely “No, I hadn't heard of it before participating in this study.”, “Yes, I had already heard/read about it and/or visited an exhibition with the illustrations (youtopias).”, and “Yes, I have been involved in the initiative and/or worked on setting up exhibitions with the youtopias myself.”.

### **Analytic Strategy**

The statistical analyses for this study were conducted with IBM SPSS, version 28. All analyses used a significance level of  $\alpha = .05$ . Besides, all analyses involving pro-environmental behavioural intentions distinguished between individual and collective pro-

environmental behaviour as well as environmental policy support due to the expectation that these types of pro-environmental behaviour may be differentially affected by the experimental manipulation. Specifically, because collective pro-environmental behaviour is more visible to others compared to individual pro-environmental behaviour, individuals are expected to be more likely to align the former to their perceptions of others' biospheric values, and thus whether those others will likely approve of their engagement in it.

The answers to the question of what the interviewees whose illustrations participants had viewed seemed to particularly care about were used as a manipulation check for the two experimental conditions. Specifically, one variable was manually coded as 1 for the green condition if participants had mentioned terms such as "nature", "environment", "sustainability", etc., and as 0 if no such terms had been mentioned. Conversely, for the non-green condition, the variable was coded as 0 if these terms had been mentioned and as 1 if they had not been mentioned. Additionally, a second variable was coded as 1 for the green condition if either of the relevant terms had been mentioned first, and as 0 if not.

Hypotheses 1 and 2 were analysed with one-way ANOVAs with study condition as the between-subject factor. Before conducting these ANOVAs, the necessary assumptions (i.e., normal distribution of the scores of the dependent variable within each condition and homogeneity of variances) were checked. Specifically, the normality assumption was checked through visual inspection of the QQ-plots and inferentially via Shapiro-Wilk tests. The assumption of homogeneity of variances was checked via Levene's tests. Additionally, Hypothesis 3 was planned to be analysed with the PROCESS macro (Igartua & Hayes, 2021) in SPSS.

Moreover, two ANCOVAs were conducted to test whether perceived representativeness moderated the association of biospheric value endorsement in the illustrations (i.e., experimental condition) with perceived biospheric value endorsement in Dutch society and pro-environmental behavioural intentions, respectively. Scatterplots were created and visually inspected to evaluate the ANCOVA assumption of a linear association

between the covariate and the dependent variable (i.e., in addition to the other ANCOVA assumptions that had already been tested with the previous analyses).

## Results

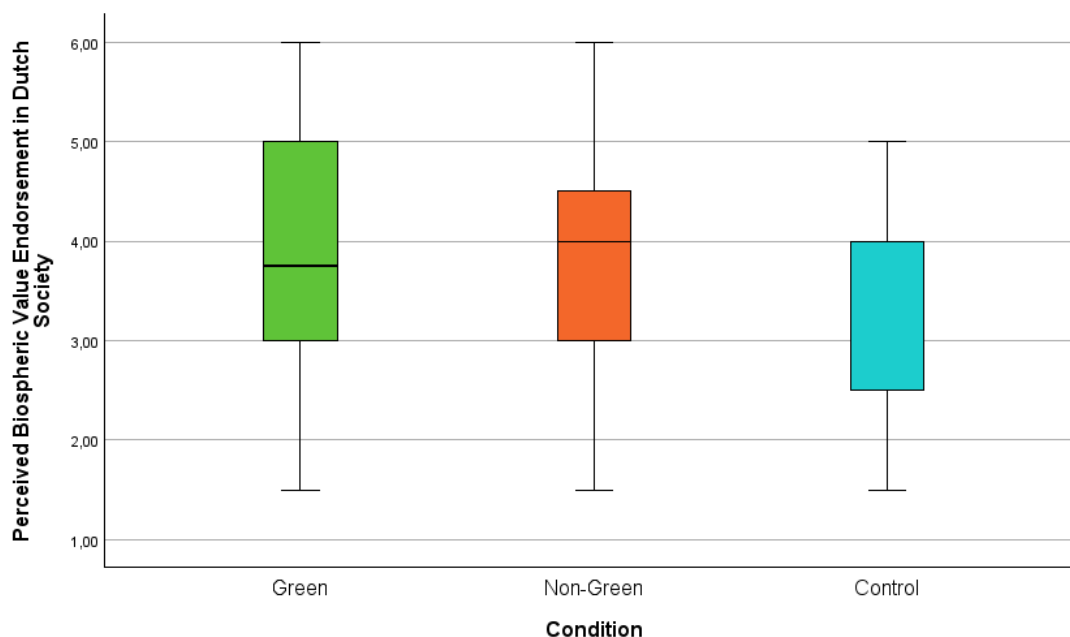
### Manipulation Check

In the green condition, 89% of participants mentioned terms indicating that they had recognised that the interviewees whose illustrations they had viewed particularly cared about nature and the environment. Additionally, 79% mentioned the relevant terms first. In the non-green condition, 66% of participants did not mention any terms indicating that they had perceived the interviewees as particularly caring about nature and the environment. Hence, the results of this manipulation check indicate that overall, the experimental manipulation worked in the intended way for the majority of participants in both experimental conditions.

### Hypothesis 1: Differences in Perceived Biospheric Value Endorsement Between Conditions

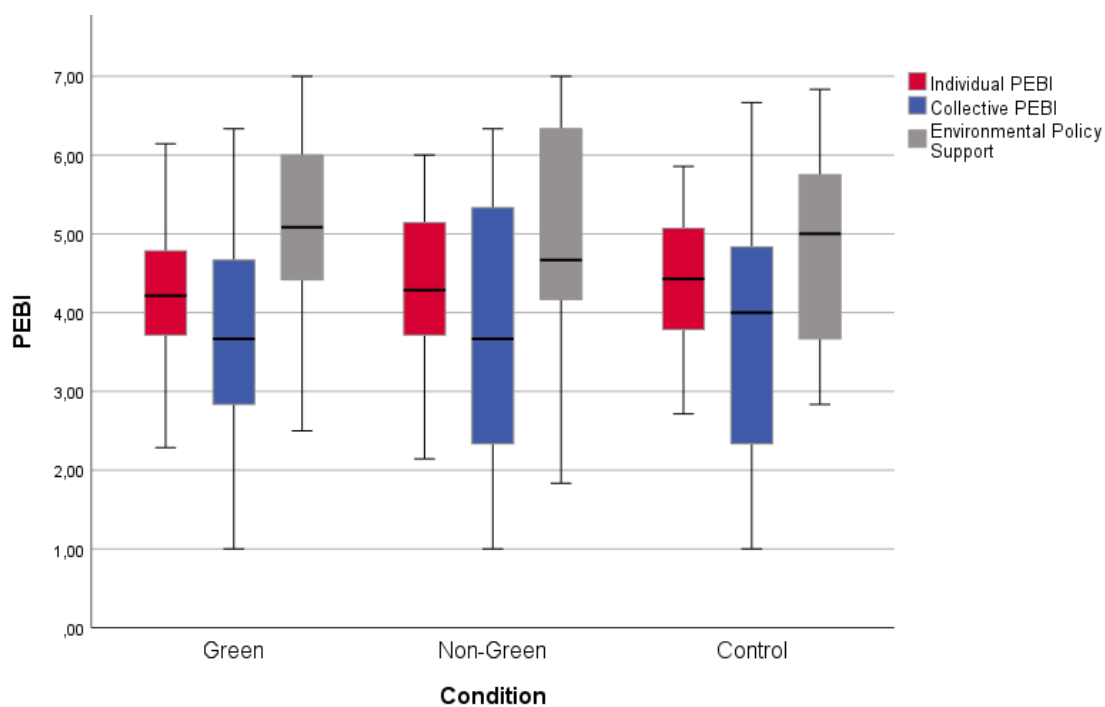
Concerning the assumptions of ANOVA, the normality assumption was violated in the control condition. However, ANOVA is deemed robust against violations of the normality assumption when group sizes are equal (Field et al., 2012), which was the case in this study as mentioned above. For the two experimental conditions, the scores were approximately normally distributed. Moreover, homogeneity of variances between the three conditions could be assumed. See Appendix C for the exact results of the assumptions tests.

A visualisation of the distribution of perceived biospheric value endorsement in Dutch society in the different conditions can be found in Figure 3. Although the ANOVA testing these differences did not become significant ( $F = 1.56$ ,  $p = .217$ ,  $\eta^2_p = .04$ ), thus yielding no support for Hypothesis 1, the means for perceived biospheric value endorsement in Dutch society were somewhat larger in the green ( $M = 3.9$ ) and non-green condition ( $M = 3.8$ ) than in the control condition ( $M = 3.4$ ).

**Figure 3***Distribution of Perceived Biospheric Value Endorsement*

### **Hypothesis 2: Differences in Pro-Environmental Behavioural Intentions Between Conditions**

The scores seemed to be approximately normally distributed for all three pro-environmental behavioural intentions subscales (i.e., individual and collective pro-environmental behaviour and environmental policy support) in all conditions, although note that in the non-green condition, the Shapiro-Wilk tests for collective pro-environmental behavioural intentions and environmental policy support became marginally significant. Homogeneity of variances between conditions could be assumed for all three subscales (see Appendix C). However, the mean differences between the conditions were small (see Figure 4) and not significant for either of the three pro-environmental behavioural intentions subscales (see Table 1). Hence, there was no support for Hypothesis 2.

**Figure 4***Distribution of Pro-Environmental Behavioural Intentions*

Note. PEBI = pro-environmental behavioural intentions.

**Table 1***ANOVA Results for Pro-Environmental Behavioural Intentions*

Type of pro-environmental behavioural intentions	<i>M</i>			<i>F</i>	<i>p</i>	$\eta^2_p$
	Green	Non-green	Control			
Individual	4.3	4.3	4.4	0.06	.946	.00
Collective	3.8	3.8	3.6	0.10	.905	.00
Policy support	5.2	5.0	4.9	0.40	.672	.01

Note.  $n = 28$  for the green condition,  $n = 29$  for the non-green condition, and  $n = 27$  for the control condition.

### Hypothesis 3: Mediation

Since the previous analyses had shown that the manipulation did not affect the hypothesised mediator (i.e., perceived biospheric value endorsement in Dutch society), no mediation effect could occur. Hypothesis 3 was thus not analysed according to the plan specified in the *Method* section. Instead, simple linear regressions of the different pro-environmental behavioural intentions subscales, respectively, on perceived biospheric value endorsement were calculated to check whether these variables still related in the expected direction. See Table 2 for the results of those regressions. Overall, the associations between perceived biospheric value endorsement and pro-environmental behavioural intentions were not statistically significant. Except for collective pro-environmental behavioural intentions, the regression coefficients pointed towards a negative association, which is the opposite of what was hypothesised.

**Table 2**

*Linear Regression Results for Pro-Environmental Behavioural Intentions on Perceived Biospheric Value Endorsement*

Type of pro-environmental behavioural intentions	<i>b</i>	<i>t</i>	<i>p</i>	<i>R</i> <sup>2</sup>
Individual	-0.11	-1.23	.221	.02
Collective	0.01	0.05	.959	.00
Policy support	-0.20	-1.80	.076	.04

*Note.* *n* = 28 for the green condition, *n* = 29 for the non-green condition, and *n* = 27 for the control condition.

### Perceived Representativeness

#### *Differences in Perceived Representativeness Between Experimental Conditions*

The difference in perceived representativeness between the two experimental conditions was planned to be analysed with a *t*-test for independent samples. However,

because the normality assumption was violated for both conditions (see Appendix C), a Mann-Whitney-*U*-test was calculated instead, as this non-parametric test does not require normal distribution. The difference between the two conditions was however not significant ( $U = 426.50$ ,  $z = 0.34$ ,  $p = .733$ ).

### ***Perceived Representativeness as a Moderator***

**Perceived Biospheric Value Endorsement.** First, the scatterplots visualising the association between perceived representativeness (i.e., the covariate) and perceived biospheric value endorsement in Dutch society (i.e., the dependent variable) did not indicate a violation of the linearity assumption of ANCOVA (see Figure 5). The plot shows that for lower values of perceived representativeness, biospheric value endorsement in Dutch society was perceived to be higher in the non-green condition, whereas for higher values of perceived representativeness, biospheric value endorsement was perceived to be higher in the green condition, and vice versa. The ANCOVA indicated that this interaction between experimental condition and perceived representativeness was significant. The exact results can be found in Table 3.

**Table 3**

#### *ANCOVA Results for Perceived Biospheric Value Endorsement*

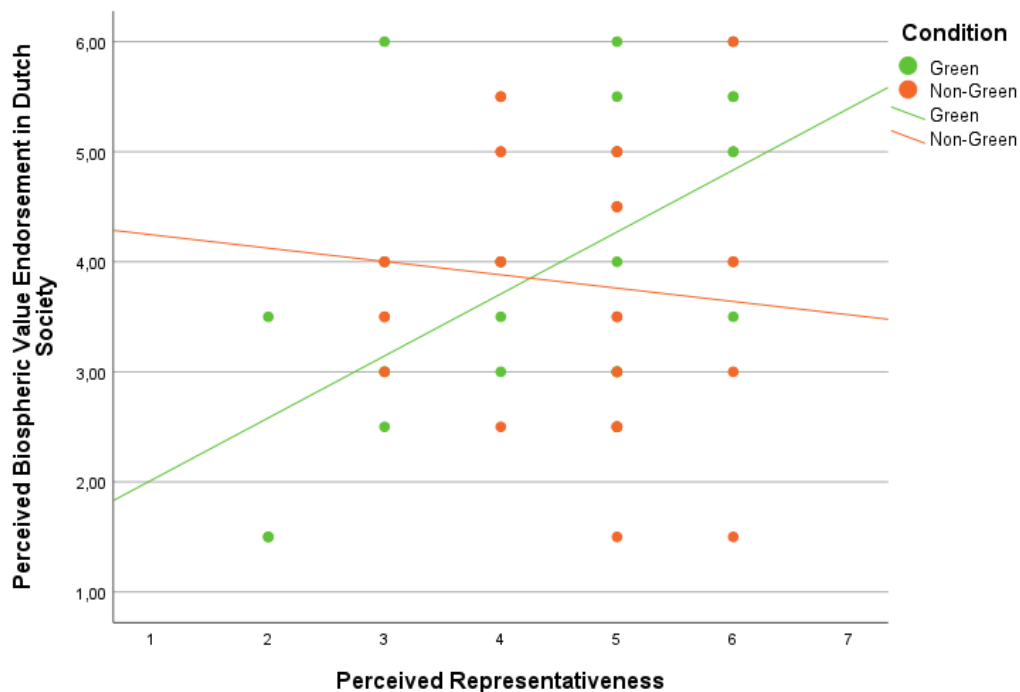
Effect	<i>b</i>	<i>t</i>	<i>p</i>	$\eta^2_p$
Experimental condition	-2.91	-2.26	.028	.09
Perceived representativeness	-0.12	-0.55	.585	.01
Experimental condition*perceived representativeness	0.68	2.47	.017	.10

*Note.* The non-green condition is set as the reference category.  $n = 28$  for the green condition and  $n = 29$  for the non-green condition.



**Figure 5**

*Interaction Between Experimental Condition and Perceived Representativeness for Perceived Biospheric Value Endorsement*



**Pro-Environmental Behavioural Intentions.** The scatterplots for the associations between perceived representativeness and the different pro-environmental behavioural intentions subscales, respectively, indicated that the linearity assumption was met in each case. However, none of these ANCOVAs indicated a significant interaction between experimental condition and perceived representativeness. See Table 4 for the exact results.

**Table 4**

*ANCOVA Results for Pro-Environmental Behavioural Intentions*

Effect	<i>b</i>	<i>t</i>	<i>p</i>	$\eta^2_p$
Individual PEBI				
Experimental condition	0.13	0.11	.912	.00
Perceived representativeness	-0.02	-0.12	.909	.00
Experimental condition*perceived representativeness	-0.04	-0.17	.865	.00

Collective PEBI				
Experimental condition	-2.50	-1.47	.148	.04
Perceived representativeness	-0.27	-0.92	.363	.02
Experimental condition*perceived representativeness	0.56	1.51	.136	.04
Environmental policy support				
Experimental condition	-2.34	-1.66	.103	.05
Perceived representativeness	-0.29	-1.22	.228	.03
Experimental condition*perceived representativeness	0.55	1.81	.076	.06

*Note.* PEBI = pro-environmental behavioural intentions. The non-green condition is set as the reference category.  $n = 28$  for the green condition and  $n = 29$  for the non-green condition.

### **Additional Analyses**

Beyond the hypotheses tests, several additional analyses were conducted with the data of the present study. This includes one-way ANOVAs testing the differences between conditions on the ratings of perceived biospheric value endorsement in Dutch society after removing the mean rating of all values (i.e., centering the scores; sometimes referred to as “mRat” in the literature; Jacobs & Wollny, 2022; Schwartz, 2009). The reason for using these centred value scores is to account for individual differences in response scale use (Jacobs & Wollny, 2022; Schwartz, 2009). They can be understood as a measure of the extent to which certain values (e.g., biospheric) are prioritised compared to all values in the scale. Besides, simple linear regressions of the centred perceived biospheric value endorsement scores on the three pro-environmental behavioural intentions subscales were also conducted. Furthermore, it was tested if perceived biospheric value endorsement differed significantly between participants of Dutch vs. other nationality.

### ***Differences Between Conditions After Removing Mean Value Ratings from Perceived Biospheric Value Endorsement***

The centred scores of perceived biospheric value endorsement were approximately normally distributed in the two experimental conditions, but the normal distribution was violated in the control condition. The variances between the conditions were equal (see Appendix C). The mean of the centred scores was slightly lower in the control ( $M = -0.5$ ,  $SD = 1.0$ ) compared to the green ( $M = 0.0$ ,  $SD = 1.3$ ) and non-green condition ( $M = -0.2$ ,  $SD = 1.1$ ), in addition to being smaller than zero (i.e., indicating that participants perceived Dutch society to endorse biospheric values to a lesser extent than other values). This is similar to the descriptive statistics for the raw scores of perceived biospheric value endorsement (see above). However, the differences between conditions were again not statistically significant ( $F = 1.78$ ,  $p = .176$ ,  $\eta^2_p = .04$ ).

### ***Associations Between Centred Perceived Biospheric Value Endorsement and Pro-Environmental Behavioural Intentions***

The associations between the centred perceived biospheric value endorsement scores and pro-environmental behavioural intentions did not become significant for any of the three pro-environmental behaviour subscales. See Table 5 for the exact results.

**Table 5**

*Linear Regression Results for Pro-Environmental Behavioural Intentions on Centred Perceived Biospheric Value Endorsement*

Type of pro-environmental behavioural intentions	<i>b</i>	<i>t</i>	<i>p</i>	<i>R</i> <sup>2</sup>
Individual	-0.07	-0.78	.440	.01
Collective	0.04	0.25	.805	.00
Policy support	-0.18	-1.51	.136	.03

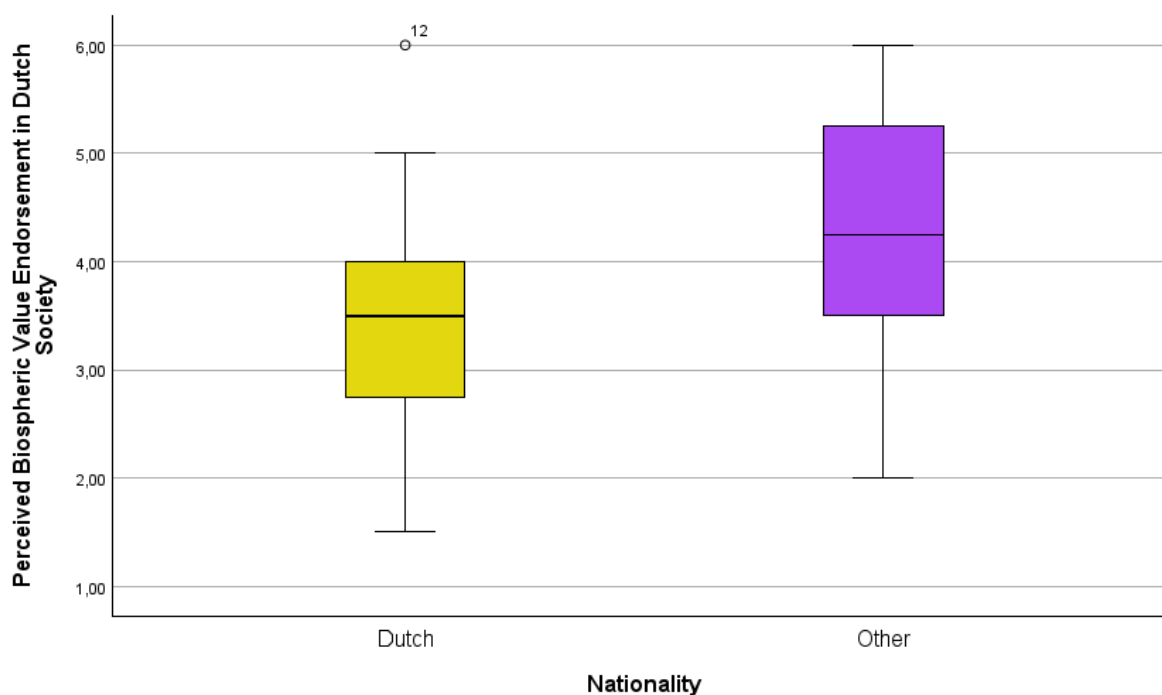
*Note.*  $n = 28$  for the green condition,  $n = 29$  for the non-green condition, and  $n = 27$  for the control condition.

### ***Differences in Perceived Biospheric Value Endorsement Between Dutch Participants and Other Nationalities***

As the normality assumption was met among non-Dutch participants ( $W = 0.95$ ,  $p = .112$ ) but violated among Dutch participants ( $W = 0.95$ ,  $p = .039$ ), a non-parametric Mann-Whitney- $U$ -test was conducted to test for differences in perceived biospheric value endorsement in Dutch society between those two groups. It became significant with  $U = 1197.50$ ,  $z = 3.40$ , and  $p < .001$ . The effect size  $r$  was calculated by dividing the standardised effect size  $z$  by the square root of the sample size (Field, 2018). This resulted in a medium to large effect of  $r = .37$ . Interestingly, Dutch participants perceived Dutch society as endorsing biospheric values to a lesser extent than did participants of other nationalities. See Figure 6 for a visualisation of these group differences.

**Figure 6**

*Perceived Biospheric Value Endorsement in Dutch Society Among Dutch and Non-Dutch Participants*



## Discussion

### Summary of Results

Overall, the present study found little to no support for its hypotheses. Perceived biospheric value endorsement was relatively low in all study conditions. As described in more detail below, the experimental manipulation had little impact on participants' perceptions of the biospheric values endorsed in Dutch society (Hypothesis 1) and pro-environmental behavioural intentions (Hypothesis 2), respectively. Additionally, these findings imply that no mediation effect (Hypothesis 3) occurred, and follow-up analyses indicated no significant relationship between perceived biospheric value endorsement in Dutch society and participants' pro-environmental behavioural intentions.

The association between biospheric value endorsement in the illustrations (i.e., experimental condition) and perceived biospheric value endorsement in Dutch society however did become significant when perceived representativeness was considered as a moderator. Further, additional analyses revealed that perceived biospheric value endorsement in Dutch society was significantly lower among Dutch compared to international participants across conditions. Taken together, the present study thus yields little to no evidence regarding the potential of the Youtopialab illustrations to positively impact observers' perceptions of biospheric value endorsement in Dutch society as well as their intentions to behave pro-environmentally. The implications of these results for theory and practice as well as the limitations of the present study and suggestions for further research are discussed below.

### Implications for Theory and Practice

#### *Perceived Biospheric Value Endorsement*

First, participants across all conditions had the impression that caring strongly for nature and the environment resembled the average Dutch citizen only slightly. This is in line with existing evidence indicating that people often perceive others as endorsing relatively low biospheric values (Bouman et al., 2020, 2021a; Bouman & Steg, 2019). However, given that

Dutch people commonly self-report relatively high biospheric values (Bouman et al., 2021a; Bouman & Steg, 2019), this finding reinforces the importance of finding ways to help people in the Netherlands form more accurate impressions of their fellow citizens' biospheric value endorsement.

Moreover, there were no significant differences in perceived biospheric value endorsement between the green and non-green experimental conditions. In this context, it is noteworthy that around one third of participants in the non-green condition expressed the opinion that the interviewees whose illustrations they had viewed particularly cared about nature, the environment, sustainability, etc. The selection of Youtopialab illustrations for this condition was based on the criterion that the illustrations should contain no or only a minimal amount of green colour, following the previously mentioned operationalisation of biospheric value endorsement by Youtopialab. However, it was sometimes difficult to find illustrations that reflected no concern with sustainability and protection of the environment at all. Instead, some of the selected utopias contained elements such as energy production from renewable sources or recycling. Thus, this may partly explain why some participants perceived the interviewees as particularly caring about nature and the environment and therefore biospheric values to be endorsed in society to a similar extent as participants in the green condition.

Additionally, the lack of differences in perceived biospheric value endorsement in Dutch society between the green and the non-green condition could also partly be due to the fact that the illustrations in the non-green condition also presented desirable visions of the future (e.g., in terms of people caring for each other, enjoying life). As mentioned previously, caring for nature and the environment has generally come to be regarded as a desirable characteristic (Bergquist, 2020; Bouman et al., 2021b). Thus, participants in the non-green condition inferring a concern with nature and the environment from overall positive impressions of the interviewees may be regarded as an example of the halo effect, a well-researched cognitive bias commonly defined as "the influence of a global evaluation on evaluations of individual attributes of a person" (Nisbett & Wilson, 1977, p. 250). Besides,

this notion that representations of utopian visions may evoke effects in observers beyond what is directly mentioned is also in line with how Fernando et al. (2020) interpret the results of their studies. Specifically, they argue that participants apparently associated their green utopia with additional positive characteristics beyond being environmentally friendly, thus envisioning a society that is peaceful and well-functioning in more general terms.

Furthermore, the finding that perceived representativeness significantly moderated the association between biospheric value endorsement in the illustrations and perceived biospheric value endorsement in Dutch society seems to point towards the relevance of perceived representativeness. That is, it appears that this factor should be taken into account when designing messages aimed at changing people's perceptions of others' values. Specifically, the impact of those messages may be reduced if the recipients deem the employed material as not representing society very well. However, one should be cautious when interpreting this finding in that way, as it may also indicate that participants based their representativeness ratings of the illustrations on their perceptions of biospheric value endorsement in Dutch society. Specifically, participants in the green condition may have rated the illustrations presented to them as highly (vs. little) representative if they believed Dutch society to endorse high (vs. low) biospheric values prior to the experimental manipulation. Conversely, participants in the non-green condition may have rated the illustrations they viewed as highly representative if they believed Dutch society to endorse low biospheric values, and vice versa.

Another interesting but unexpected finding was that international participants perceived Dutch society as endorsing significantly higher biospheric values compared to Dutch participants. Because the sample consisted mostly of students, this may partly be due to international students having decided relatively recently to move to the Netherlands based on positive perceptions of the country and its inhabitants among other things. Besides, compared to Dutch people themselves, international students may also interact relatively more with Dutch people who are similar to them, which may lead to more positive overall perceptions of Dutch society. Additionally, a city like Groningen may also seem relatively

green compared to other places that especially international students may use as a reference point for their judgements of the biospheric values endorsed in Dutch society, which may thus positively influence those judgements. On the other hand, international students endorsing relatively positive perceptions of Dutch society may also be due to their limited experience with it, which may make them hesitate to evaluate it negatively. However, note that the mean of perceived biospheric value endorsement was still relatively low among international participants, as well as being lower than the biospheric values Dutch people typically self-report (Bouman et al., 2021a; Bouman & Steg, 2019).

### ***Pro-Environmental Behavioural Intentions***

Overall, this study did not find any effects of viewing the Youtopialab illustrations on participants' pro-environmental behavioural intentions. Additionally, there was no significant association between perceived biospheric value endorsement in Dutch society and pro-environmental behavioural intentions in the present study. This partially replicates the results of a recent study by Huang et al. (2022), who also did not find an effect of perceived biospheric group values on private- and public-sphere pro-environmental behavioural intentions. These findings appear to contradict the reasoning that perceptions of others' biospheric values are one of the factors influencing individuals' engagement in pro-environmental behaviour.

One potential explanation for this is that whether the perceived values of others (e.g., Dutch people) influence individuals' behaviour likely depends on the extent to which they regard that group as important and identify with it (Bouman et al., 2020; Tajfel & Turner, 1979; Turner et al., 1987). In line with this, Bouman et al. (2020) found that perceived biospheric group values were more strongly related to participants' personal norms and willingness to behave pro-environmentally as well as their self-reported pro-environmental behaviour the more they identified with the group. Thus, it is possible that participants in the present study did not identify sufficiently strongly with the general Dutch society for their perceptions of it to have a meaningful effect on their pro-environmental behavioural



intentions. This appears likely since about 40% of participants were of non-Dutch nationality and may therefore identify and be influenced more by people in their countries of origin. Besides, most participants were students who may identify more strongly with fellow students or friends and family than with a larger national identity.

Strengths of the present study include that it used an experimental design that allowed for testing the causal effects of viewing the Youtopialab illustrations on its outcome variables perceived biospheric value endorsement in Dutch society and pro-environmental behavioural intentions. However, it also has several important limitations, which will be discussed in the following.

### **Limitations**

First, one central limitation is that the study was considerably underpowered. Thus, the failure to detect statistically significant effects may in general be due to this lack of power rather than the respective effects not existing in the population, which warrants further research. Another general limitation is that the sample was not representative of the general population, so that findings cannot directly be generalised to it. Specifically, the sample was very young and consisted of mostly students and female participants. Some, although inconsistent, evidence suggests that there may be age differences in environment-related variables such as pro-environmental behaviour (i.e., one of the central variables in this study; e.g., Ágoston et al., 2024). The sample composition may also partly explain why the present study did not find the hypothesised effects, which could be supported in different samples.

Related to the fact that the sample mostly consisted of students participating in the study through the SONA system of the University of Groningen for course credit are general concerns about the quality of the data provided by SONA participants as some of them may not fill in surveys conscientiously. The present study tried to ensure data quality through excluding participants from the analyses who failed the attention check, indicated that their data should not be used and completed the study in a very short time. Besides, the manipulation check indicated that most participants in both experimental conditions

perceived the Youtopialab illustrations they had viewed as reflecting value endorsement in the intended way. Notwithstanding that, there still may have been an issue with low data quality for some participants affecting the results. The initial study design planned to assess the time participants spent viewing each illustration to be able to evaluate the potential of the illustrations to have an impact on them. However, there was an issue with implementing these timers in combination with randomising the order of the illustrations in Qualtrics, so that it is not clear how much attention participants paid to the illustrations.

Furthermore, the experimental manipulation was perhaps not strong enough to affect participants' perceptions of the values endorsed in Dutch society and thereby their pro-environmental behavioural intentions. Particularly, participants may not have perceived the Youtopialab illustrations as representative of society. As mentioned above, the study tried to induce perceived representativeness by telling participants that the interviewees were representative of Dutch society when introducing the Youtopialab initiative at the beginning. However, one participant from the green condition indicated that they were not aware of this information and perceived the interviewees and their illustrations as largely unrepresentative of the general society, thus it is possible that this was the case for other participants as well. Additionally, the overall mean of perceived representativeness across both experimental conditions was close to the scale midpoint (i.e., 4 = *Neutral*), indicating that participants did not perceive the illustrations as representing Dutch society very well, although they also did not regard the illustrations as highly unrepresentative. Hence, making the information about representativeness stand out more may have helped to establish the hypothesised effects of viewing the Youtopialab illustrations on the study's outcome variables (although recall that this information was deceiving because neither experimental condition truly represented biospheric value endorsement in the general Dutch society accurately). Beyond that, the experimental manipulation also may have been too weak for finding the hypothesised effects because participants spent a relatively short amount of time viewing the illustrations.

Finally, the results of this study also suggest that the Youtopialab illustrations may not be suitable for being separated into groups that evoke differential effects in observers, at

least concerning perceived biospheric value endorsement. This relates to the previously mentioned points that it was difficult to identify illustrations for the non-green condition not reflecting any concern with sustainability and the protection of the environment at all, and that all illustrations (i.e., also those used for the non-green condition) presented generally desirable visions of the future. Hence, other types of materials may be better able to establish such differential effects.

### **Suggestions for Further Research**

Some suggestions for further research can be inferred from this study's findings and limitations. First, based on the possibility that the time spent viewing the Youtopialab illustrations may have been too short to evoke the hypothesised effects, it could prove insightful to investigate the effects of a more intensive engagement with these illustrations, also in other contexts than that of an experimental online study (e.g., at exhibitions showcasing them to people in a more natural setting). Additionally, it may be interesting to investigate the effects of materials other than those created by the Youtopialab initiative that present individuals with utopian visions of others (i.e., in visual, textual or other formats). Particularly the potential of representations of utopias to motivate changes in individuals' pro-environmental behaviour warrants further investigation, as the present study could not establish an effect on this variable, which however may have been due to its limitations.

### **Conclusion**

In sum, the present study replicates previous research findings that people perceive others as endorsing relatively low biospheric values for the Dutch context. Given that perceived groups values seem to relate to individuals' pro-environmental behaviour, and that increased engagement in pro-environmental behaviour is necessary to effectively mitigate environmental issues such as climate change, the research literature states the importance of finding ways to help individuals form more accurate perceptions of others' biospheric values. However, the present study does not find support for this association between perceived biospheric value endorsement in Dutch society and intentions to behave pro-environmentally.

In addition, presenting individuals with the illustrations of Dutch citizens' utopias created by the Youtopialab initiative did not change their perceptions of biospheric value endorsement in Dutch society or their intentions to behave pro-environmentally. These findings suggest that the perceived values of the general Dutch society may not be relevant for everyone in guiding their pro-environmental behaviour. Considering existing empirical evidence, it seems likely that the lack of effects could be explained by the general Dutch society not being very relevant to the population the study sample was drawn from (i.e., young, mostly students and female, and ca. 40% of non-Dutch nationality), as well as the presented information on biospheric value endorsement in Dutch society not being representative, which appear to be key avenues for future research. The study is subject to several limitations, especially being underpowered, which may partially explain not finding the hypothesised effects. Thus, further research on the potential of representations of others' utopias on observers in general, and the illustrations created by Youtopialab in particular, seems warranted.

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## Appendix A: Qualtrics Survey

### Figure A1

#### Research Information for SONA Participants



Thank you for your interest in participating in this study. My name is Constanze Dettke and I am conducting this study for my master thesis in the Environmental Psychology program at the University of Groningen (RUG). I receive support with this research from my supervisor Dr. Thijs Bouman.

#### Do I have to participate in this research?

Participation in the research is voluntary. However, your consent is needed. Therefore, please read this information carefully. Only afterwards you decide if you want to participate. If you decide not to participate, you do not need to explain why, and there will be no negative consequences for you. You have this right at all times, including after you have consented to participate in the research.

#### Why this research?

This study is about societal issues and how Dutch citizens would like to address them in their dream future countries. We aim to learn more about what people think the Dutch care about based on illustrations of such dream countries. Besides, we are also interested in what you personally care about and your behavior.

#### What do we ask of you during the research?

Before beginning with the data collection, you will first be asked to indicate your consent to participate in this study. You will then be presented with some materials addressing the question what Dutch people care about. After that, we will ask you some questions about the materials presented to you and about certain aspects of your personality and behavior. At the end of the study, we will ask you for some demographic information (such as your age and gender). Completing the study will take approximately 15 minutes. First year psychology students at RUG can receive course credit as compensation for their participation through SONA.

#### Are there any negative consequences of participation?

We do not expect any negative consequences from participating in this study for you.

#### How will we treat your data?

The data collected in this study are processed as part of the master thesis of Constanze Dettke. For participants accessing the study through the SONA system of the University of Groningen, personal data is collected in the form of their SONA IDs for the purpose of granting them their SONA credits. The IDs will be removed from the dataset after the credits have been granted and the data collection is terminated. Apart from this, no personal data is collected with this study.

#### What else do you need to know?

If you have any further questions about this study, please send an email to [c.dettke.1@student.rug.nl](mailto:c.dettke.1@student.rug.nl).

Do you have questions/concerns about your rights as a research participant or about the conduct of the research? You may also contact the Ethics Committee of the Faculty of Behavioural and Social Sciences of the University of Groningen: [ec-bsb@rug.nl](mailto:ec-bsb@rug.nl).



**Figure A2***Informed Consent SONA Participants*

- I have read the information about the research. I have had enough opportunity to ask questions about it.
- I understand what the research is about, what is being asked of me, which consequences participation can have, how my data will be handled, and what my rights as a participant are.
- I understand that participation in the research is voluntary. I myself choose to participate. I can stop participating at any moment. If I stop, I do not need to explain why. Stopping to participate will have no negative consequences for me.
- Below, I indicate what I am consenting to.

---

Consent to participate in the research

- Yes, I consent to participate.
- No, I do not consent to participate.

---

Consent to processing my personal data

- Yes, I consent to the processing of my personal data as mentioned in the research information. I know that until 31-05-2024 I can ask to have my data withdrawn and erased. I can also ask for this if I decide to stop participating in the research.
- No, I do not consent to the processing of my personal data.

---

*You have the right to a copy of this consent form.*

[Download consent form](#)



## Figure A3

### Research Information Other Participants



Thank you for your interest in participating in this study. My name is Constanze Dettke and I am conducting this study for my master thesis in the Environmental Psychology program at the University of Groningen (RUG). I receive support with this research from my supervisor Dr. Thijs Bouman.

#### Do I have to participate in this research?

Participation in the research is voluntary. However, your consent is needed. Therefore, please read this information carefully. Only afterwards you decide if you want to participate. If you decide not to participate, you do not need to explain why, and there will be no negative consequences for you. You have this right at all times, including after you have consented to participate in the research.

#### Why this research?

This study is about societal issues and how Dutch citizens would like to address them in their dream future countries. We aim to learn more about what people think the Dutch care about based on illustrations of such dream countries. Besides, we are also interested in what you personally care about and your behavior.

#### What do we ask of you during the research?

Before beginning with the data collection, you will first be asked to indicate your consent to participate in this study. You will then be presented with some materials addressing the question what Dutch people care about. After that, we will ask you some questions about the materials presented to you and about certain aspects of your personality and behavior. At the end of the study, we will ask you for some demographic information (such as your age and gender). Completing the study will take approximately 15 minutes.

#### Are there any negative consequences of participation?

We do not expect any negative consequences from participating in this study for you.

#### How will we treat your data?

The data collected in this study are processed as part of the master thesis of Constanze Dettke. We will not collect any personal data from you, therefore your data will be completely anonymous.

#### What else do you need to know?

If you have any further questions about this study, please send an email to [c.dettke.1@student.rug.nl](mailto:c.dettke.1@student.rug.nl).

Do you have questions/concerns about your rights as a research participant or about the conduct of the research? You may also contact the Ethics Committee of the Faculty of Behavioural and Social Sciences of the University of Groningen: [ec-bss@rug.nl](mailto:ec-bss@rug.nl).



**Figure A4***Informed Consent Other Participants*

- I have read the information about the research. I have had enough opportunity to ask questions about it.
- I understand what the research is about, what is being asked of me, which consequences participation can have, how my data will be handled, and what my rights as a participant are.
- I understand that participation on the research is voluntary. I myself choose to participate. I can stop participating at any moment. If I stop, I do not need to explain why. Stopping to participate will have no negative consequences for me.
- Below, I indicate what I am consenting to.

---

Consent to participate in the research

- Yes, I consent to participate.
- No, I do not consent to participate.

---

*You have the right to a copy of this consent form.*

[Download consent form](#)



## Figure A5

### Introduction Youtopialab Experimental Conditions



In the following, you will receive some information about an initiative called "Youtopialab". Please read this information carefully.

Youtopialab is a collective of volunteers who since 2019 have conducted interviews with about 100 Dutch citizens about their dream future countries. The interviewees were representative of the general Dutch population.

Professional designers then created illustrations - so-called "youtopias" - based on these interviews. The aim of Youtopialab is to use these illustrations to make more visible what Dutch people care about. This is also because people often do not talk to each other about their values, which can make it difficult to know what other people really care about.

In the illustrations, the things that people care about are organized according to eight different dimensions (innovation, possessions, nature, etc.), and each of those dimensions is represented by a different color, as shown in the visualization below. Additionally, white stands for the things that people want to regulate or limit.

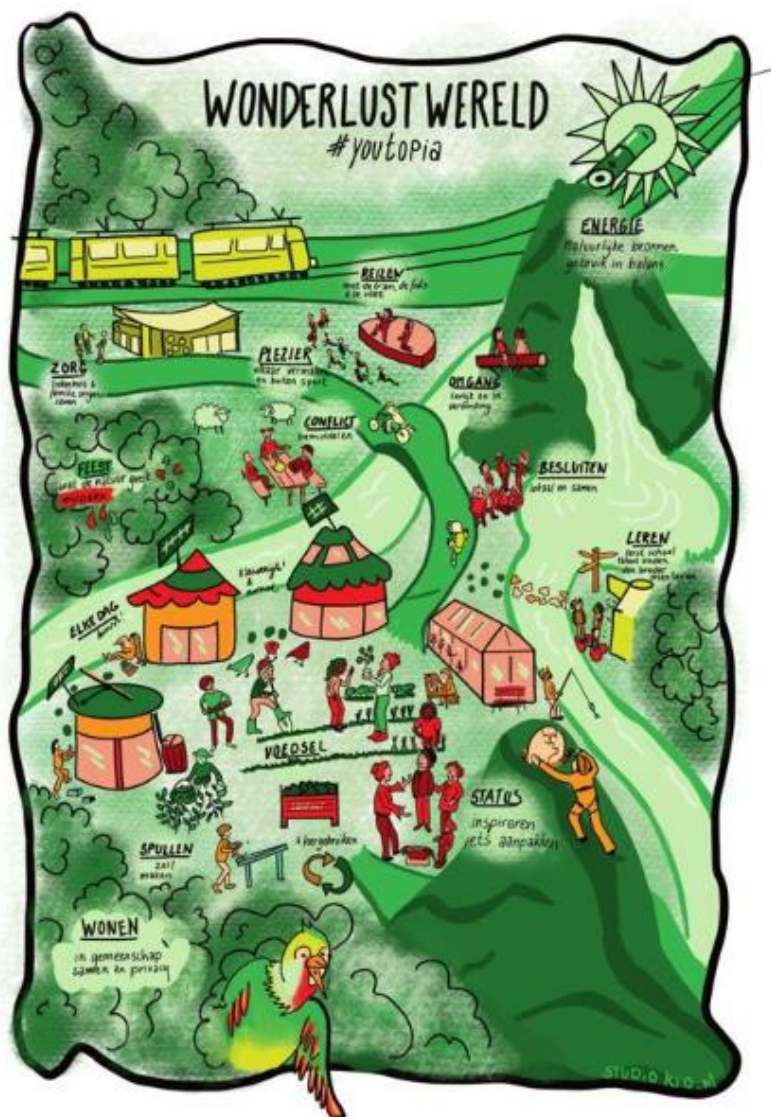


We will now present some of the youtopias to you. Please take some time to have a good look at them. Please note that although these youtopias contain some text in Dutch, it does not matter for this study if you do not speak Dutch and therefore do not understand this text.



Figure A6

Presentation Youtopias Experimental Conditions



Note. This figure presents how the illustrations in both experimental conditions were generally presented, using an example from the green condition.

**Figure A7**

*Recap Illustrations and Manipulation Check Green Condition*

To recap, here is an overview of all the illustrations we have presented to you:



Besides, here is the visualization showing the eight dimensions of the things the interviewed people care about again.



Based on the illustrations you have seen, what do you think the interviewed persons particularly care about?



**Figure A8**

*Recap Illustrations and Manipulation Check Non-Green Condition*

To recap, here is an overview of all the illustrations we have presented to you:



Besides, here is the visualization showing the eight dimensions of the things the interviewed people care about again.



Based on the illustrations you have seen, what do you think the interviewed persons particularly care about?





## Figure A9

### Experimental Manipulation Control Condition



In the following, you will receive some information about an initiative called "Youtopialab". Please read this information carefully.

Youtopialab is a collective of volunteers who since 2019 have conducted interviews with about 100 Dutch citizens about their dream future countries. The interviewees were representative of the general Dutch population.

Professional designers then created illustrations - so-called "youtopias" - based on these interviews. The aim of Youtopialab is to use these illustrations to make more visible what Dutch people care about. This is also because people often do not talk to each other about their values, which can make it difficult to know what other people really care about.

In the illustrations, the things that people care about are organized according to eight different dimensions (innovation, possessions, nature, etc.), and each of those dimensions is represented by a different color, as shown in the visualization below. Additionally, white stands for the things that people want to regulate or limit.



Please take some time to think about how the youtopia of a typical Dutch person would look like. That is, what are the things a typical Dutch person cares about and would thus be visible in such an illustration. Please enter your answer in the text box below.

**Figure A10***Assessment Value Perceptions*

Below you will see brief descriptions of different people. **We would like you to indicate how much each person is like an "average" Dutch citizen.**

**1** means that the person is **not at all like an "average" Dutch citizen**,

**6** means that the person is **very much like an "average" Dutch citizen**.

Please try to distinguish as much as possible in your answering by using different scores. The person that is most like an "average" Dutch citizen should thus receive the highest score. The person that is the least like an "average" Dutch citizen, the lowest.

< It's important to this person to protect the environment. This person strongly believes that people should care for nature. >

A horizontal progress bar at the bottom of the text box, with a blue segment on the left and a grey segment on the right.

- Not at all like an average Dutch citizen
- Not like an average Dutch citizen
- A little like an average Dutch citizen
- Somewhat like an average Dutch citizen
- Like an average Dutch citizen
- Very much like an average Dutch citizen



## Figure A11

### Assessment Individual Pro-Environmental Behavioural Intentions



How often are you planning to engage in the following behaviours in the next year?

Eat a vegetarian/vegan meal

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Separate paper from your waste

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Limit your time in the shower to reduce your energy consumption

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Buy organic food

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Avoid travelling by plane

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Bring your own bag for grocery shopping

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Pick up litter from the street

Never	Rarely	Occasionally	Somewhat often	Often	Very often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Figure A12

## Assessment Collective Pro-Environmental Behavioural Intentions



How likely are you to engage in the following actions to contribute to environmental protection in the next year?

Sign a petition

Not at all likely	Not likely	Somewhat unlikely	Neutral	Somewhat likely	Likely	Very likely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Protests, public demonstrations, sit-ins, strikes or rallies

Not at all likely	Not likely	Somewhat unlikely	Neutral	Somewhat likely	Likely	Very likely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Encourage other people to act environmentally friendly

Not at all likely	Not likely	Somewhat unlikely	Neutral	Somewhat likely	Likely	Very likely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Figure A13

## Assessment Environmental Policy Support



Please state your opinion on the following types of environmental policies.

	Strongly opposed						Strongly in favor
	1	2	3	4	5	6	7
Implementing laws against 'ecocide', forbidding large-scale destruction of ecosystems and biodiversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using public money to subsidize renewable energy such as wind and solar power	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing taxes on fossil fuels, such as oil, gas, and coal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly opposed						Strongly in favor
	1	2	3	4	5	6	7
Banning the sale of new petrol and diesel cars after 2035, while used petrol and diesel cars purchased after 2035 can still be driven until the end of their lifespan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setting the overall NL target for Renewable Energy Sources consumption by 2030 to 45%. <i>For reference, in 2021, almost 22% of the energy consumed in the EU came from renewable sources.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing taxes on beef so that the price of beef products doubles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Figure A14

### Assessment Environmental-Self-Identity



Please respond to the following questions by choosing the answer option that describes you best.

Acting environmentally friendly is an important part of who I am.

Totally disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Totally agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am the type of person who acts environmentally friendly.

Totally disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Totally agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I see myself as an environmentally friendly person.

Totally disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Totally agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Figure A15

### Assessment Perceived Representativeness



Please indicate if you think that the things the people whose youtopias you have seen care about are representative of what Dutch people in general care about.

- Not at all representative
- Not representative
- Rather not representative
- Neutral
- Rather representative
- Representative
- Very representative



**Figure A16***Assessment Demographic Variables*

Which of these age groups do you belong to?

- 18-25 years
  - 26-29 years
  - 30-39 years
  - 40-49 years
  - 50-59 years
  - 60 years or older
- 

Which of these genders do you most identify with?

- Woman
  - Man
  - Other
  - Prefer not to say
- 

What is your nationality?

- Dutch
  - Other
- 

Do you speak Dutch?

- Yes
- No



**Figure A17***Assessment Familiarity with Youtopialab*

Had you already heard of the Youtopialab initiative before participating in this study?

- No, I hadn't heard of it before participating in this study.
- Yes, I had already heard/read about it and/or visited an exhibition with the illustrations (youtopias).
- Yes, I have been involved in the initiative and/or worked on setting up exhibitions with the youtopias myself.





## Figure A18

### *Debriefing and Debriefed Consent*



Thank you for taking this survey!

The aim of this study is to find out if viewing the illustrations created by Youtopialab has an impact on people's perceptions of how much Dutch people care about the environment. Besides, we are also investigating whether perceiving Dutch people to care about the environment motivates people to behave pro-environmentally.

When taking the survey, you were randomly assigned to one of four groups. If you were asked to view some Youtopialab illustrations (youtopias), this means that you were assigned to either of the two so-called "experimental groups". These groups differed regarding the extent to which the people on whose interviews the presented youtopias are based seem to care about the environment. This is reflected by the amount of green colour in the illustrations. Specifically, there was a) one group for which all illustrations contained a lot of green and b) one for which they contained very little green. In the information about the Youtopialab initiative at the start of this study, you were told that the sample of interviewees is representative of the general Dutch population. However, that is not truly the case for the selection of youtopias in the first two experimental groups. We did this to increase the likelihood of finding an effect of the experimental group on the study's outcome variables.

If you did not view any youtopias, but were instead asked what the ideal imagined country of a typical Dutch person would look like, you have been assigned to the so-called "control group". This group helps us to make sure that the effects we observe are really due to viewing the illustrations and not some other factors instead.

The hypotheses for this study are that participants who viewed youtopias containing relatively more green colour will perceive Dutch people as caring more about the environment and will therefore be more motivated to behave pro-environmentally than participants who viewed youtopias containing less green colour or who did not view any illustrations.

Additionally, the study also collected data on other variables such as environmental self-identity (that is, whether you see yourself as an environmentally friendly person), the extent to which participants in the experimental groups think that the extent to which the interviewees whose youtopias they have viewed care about the environment really is representative of how much Dutch people in general care about the environment, other types of values among Dutch people, and some demographic variables to be able to investigate whether these variables also have an influence on the study's outcome variables.

Now that you have received this information, you have the right to refuse the processing of your data without any negative consequences. Therefore, please indicate below if you still agree to your data being processed.

---

Do you still consent to the processing of your data for this study?

- Yes, I still consent to the processing of my data.
- No, I wish to withdraw my consent to processing my data.



**Figure A19**

*Comments About the Study*



Do you want to share any comments about the study in general, the Youtopialab illustrations, etc.? If yes, you may do so in the text box below.

**Figure A20**

*Data Quality Control Item*



To ensure the quality of our data, we would like you to indicate whether you answered the questions in this study carefully.

- Yes, I carefully answered the questions. My data can be used for the analyses.
- No, I only clicked through the study. My data should not be used for the analyses.



## Appendix B: Youtopalab Illustrations Used for Experimental Manipulation

### Green Condition

Figure B1

Yutopia No. 1 Green Condition



Figure B2

Youtopia No. 2 Green Condition

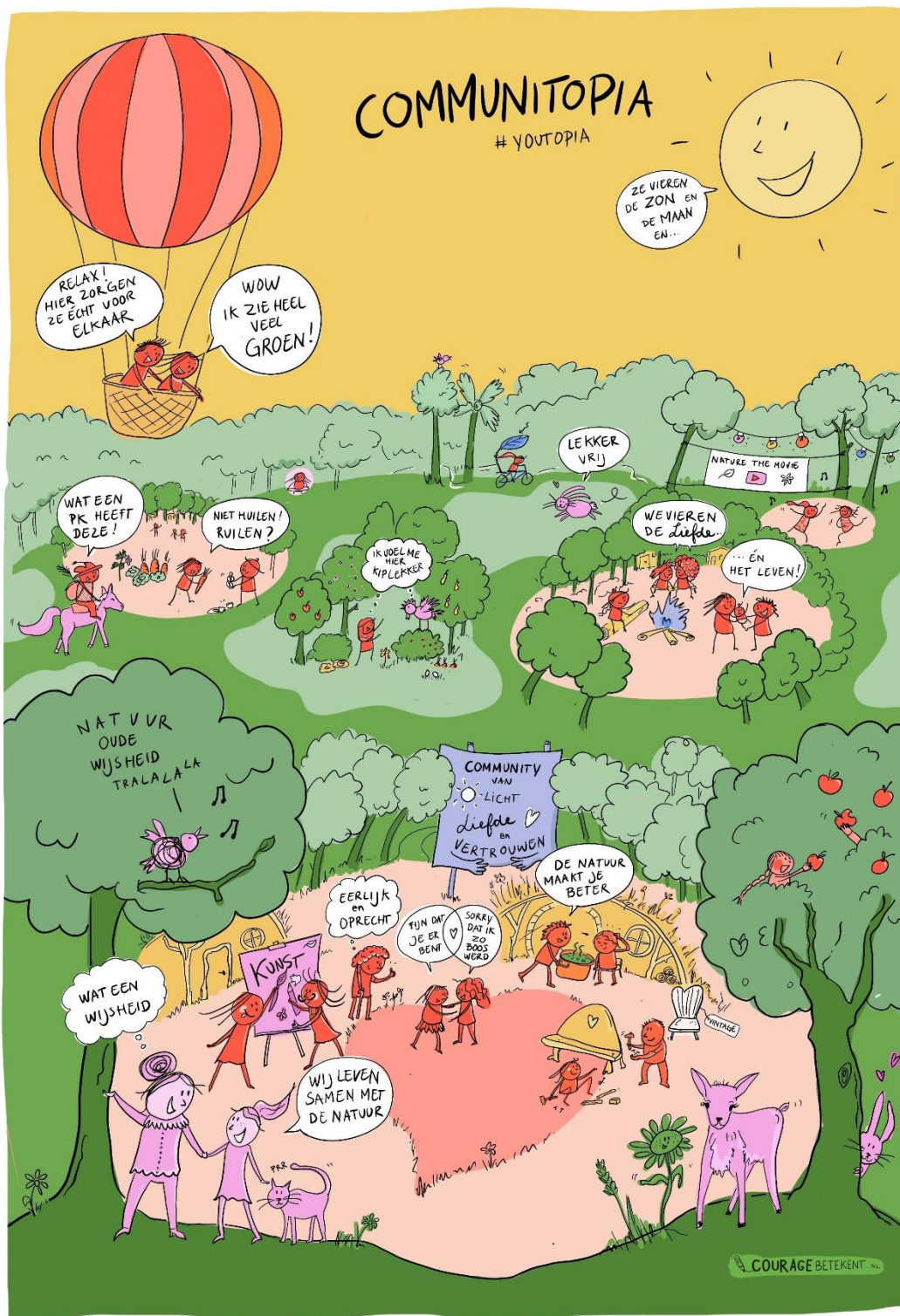


Figure B3

Youtopia No. 3 Green Condition



Figure B4

Youtopia No. 4 Green Condition



Figure B5

Youtopia No. 5 Green Condition

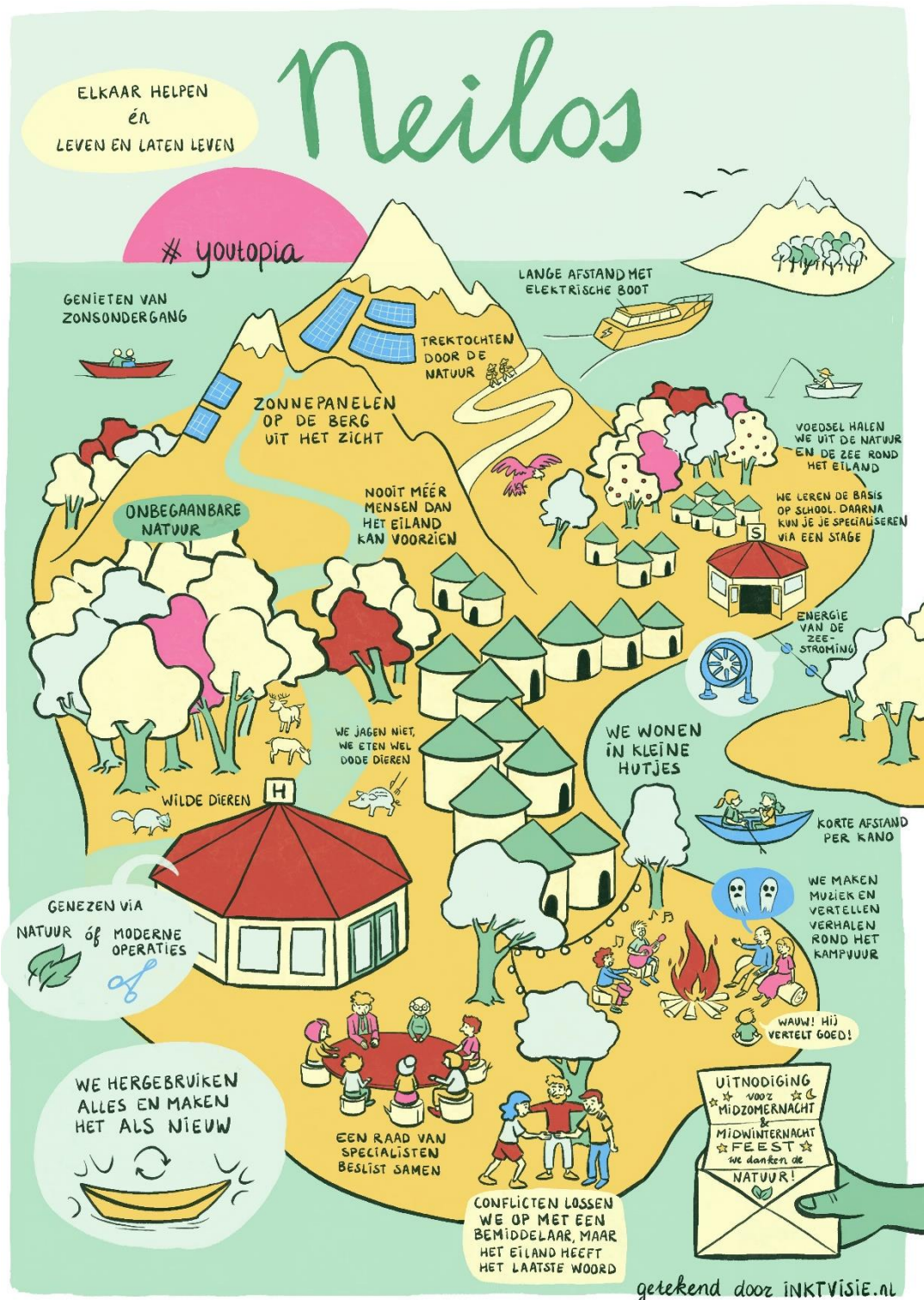


Figure B6

Youtopia No. 6 Green Condition

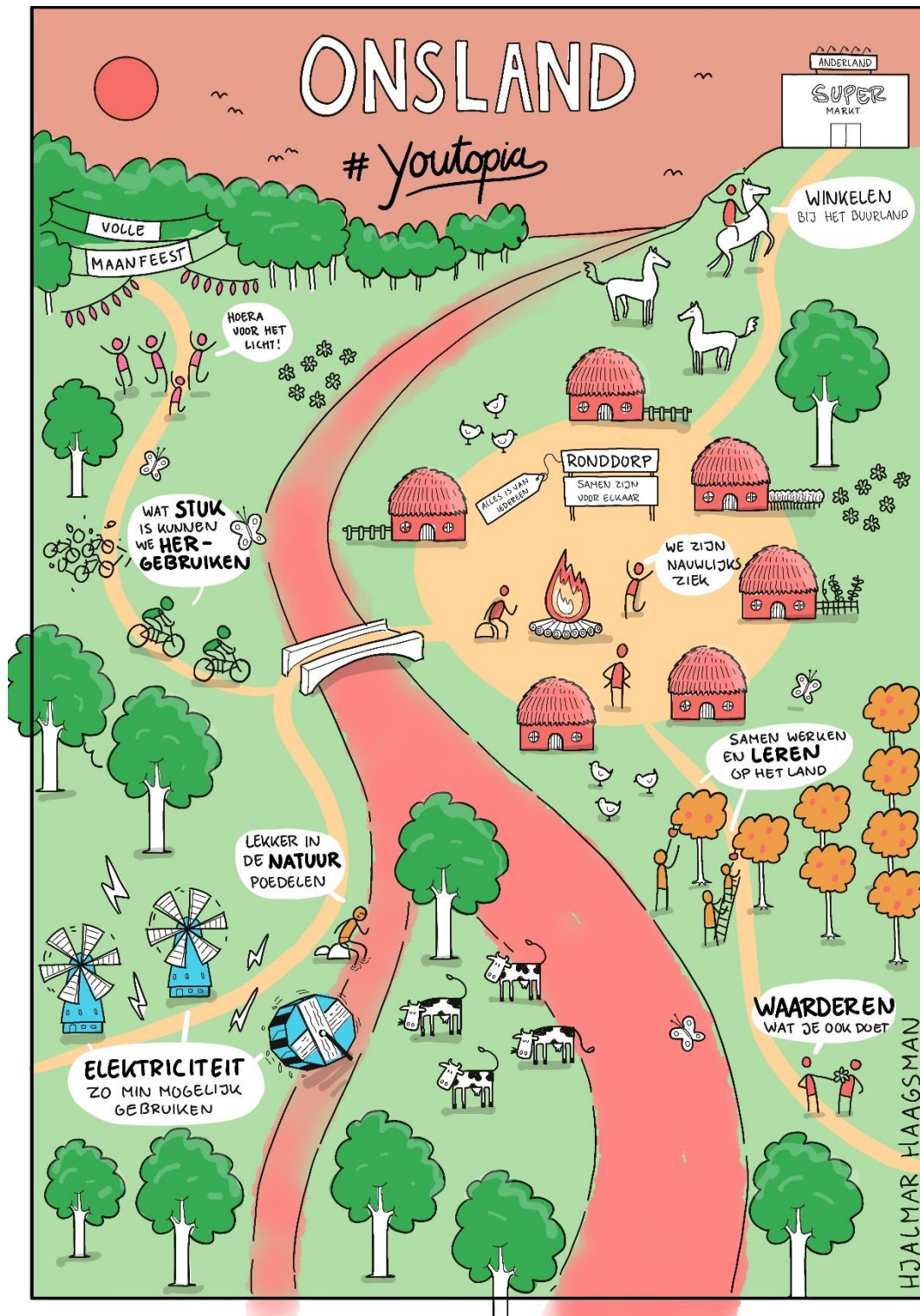




Figure B7

Youtopia No. 7 Green Condition



Figure B8

Youtopia No. 8 Green Condition



Figure B9

Youtopia No. 9 Green Condition

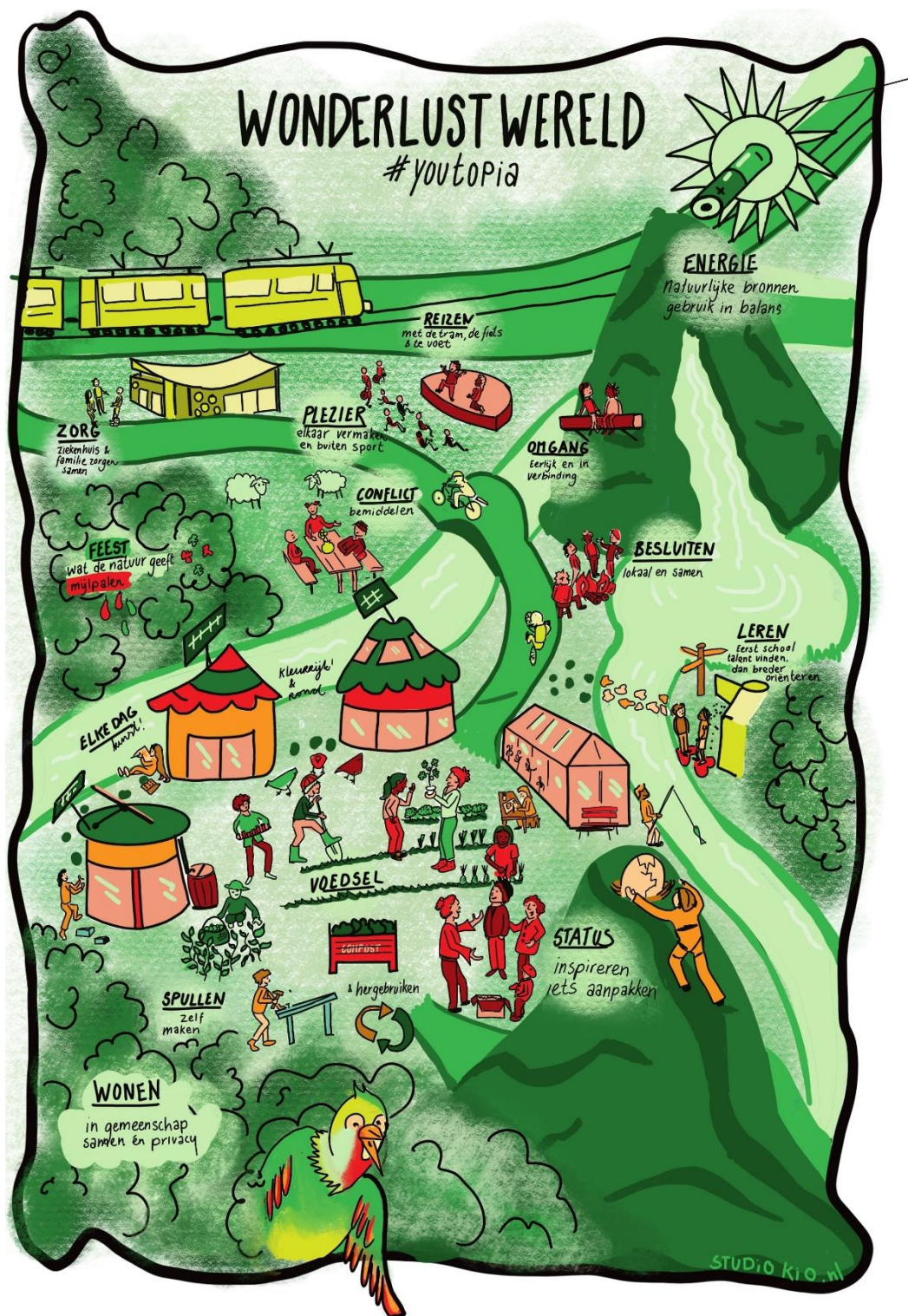


Figure B10

Youtopia No. 10 Green Condition



## Non-Green Condition

Figure B11

Youtopia No. 1 Non-Green Condition

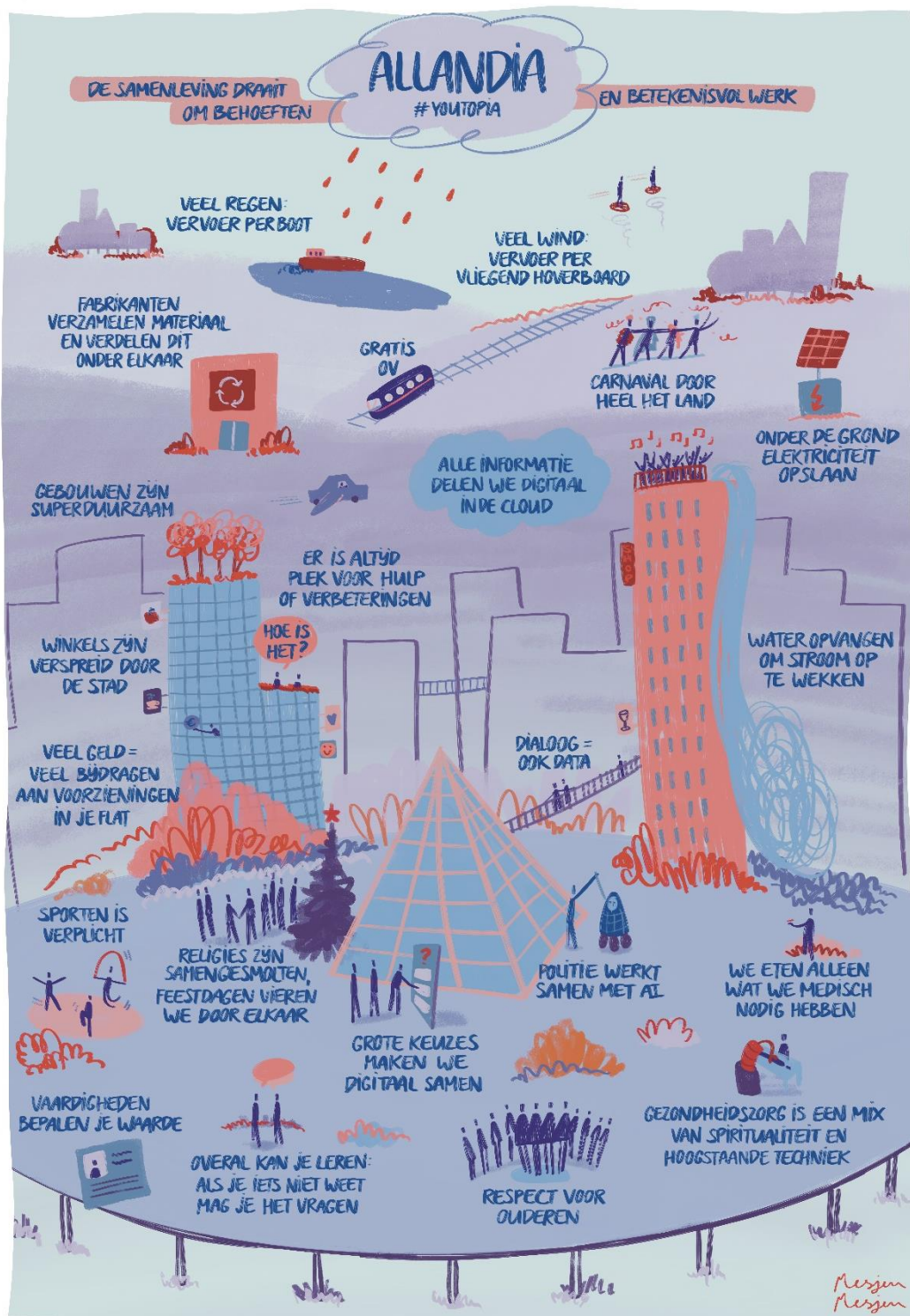


Figure B12

Youtopia No. 2 Non-Green Condition

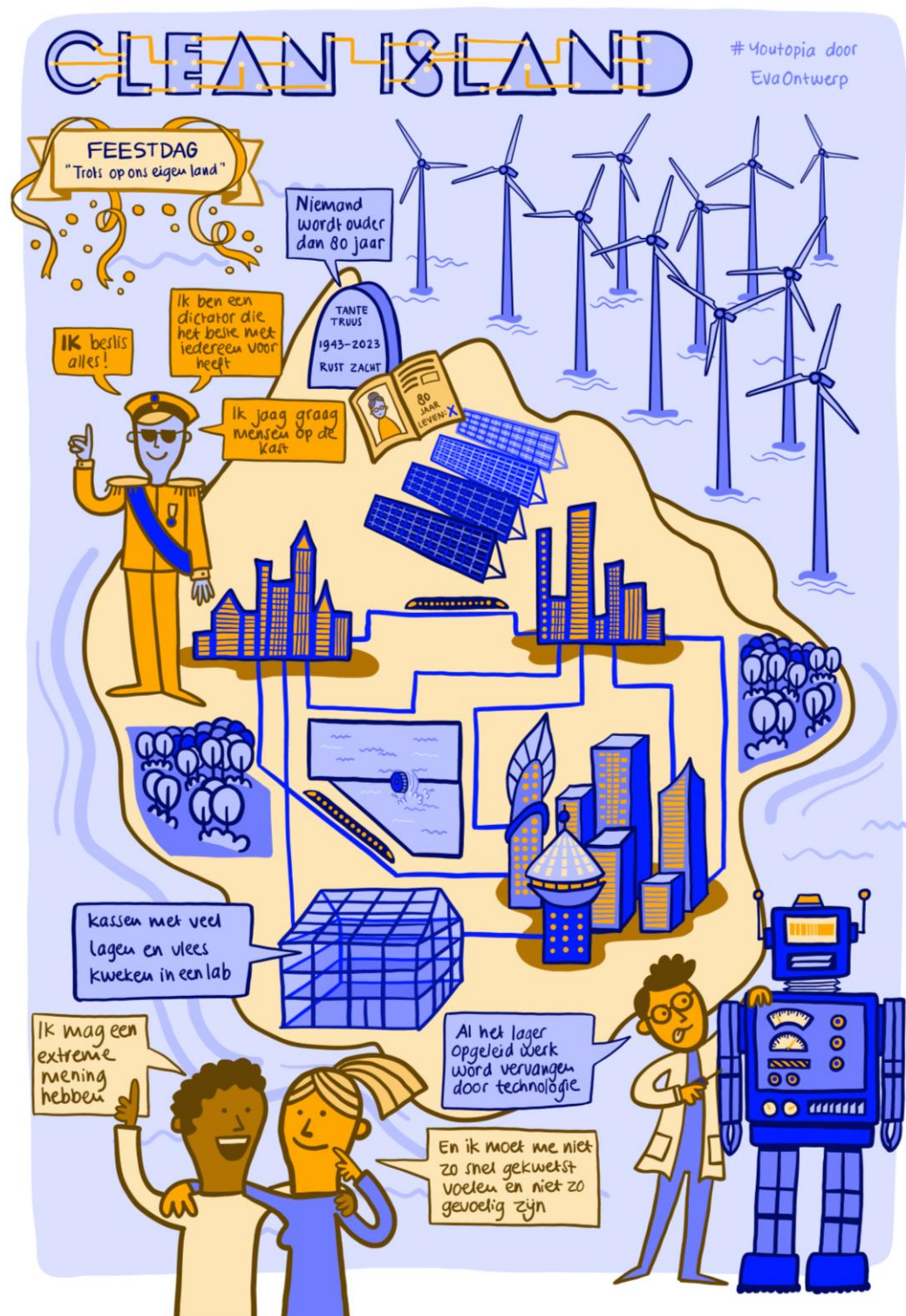


Figure B13

Youtopia No. 3 Non-Green Condition



Figure B14

Youtopia No. 4 Non-Green Condition

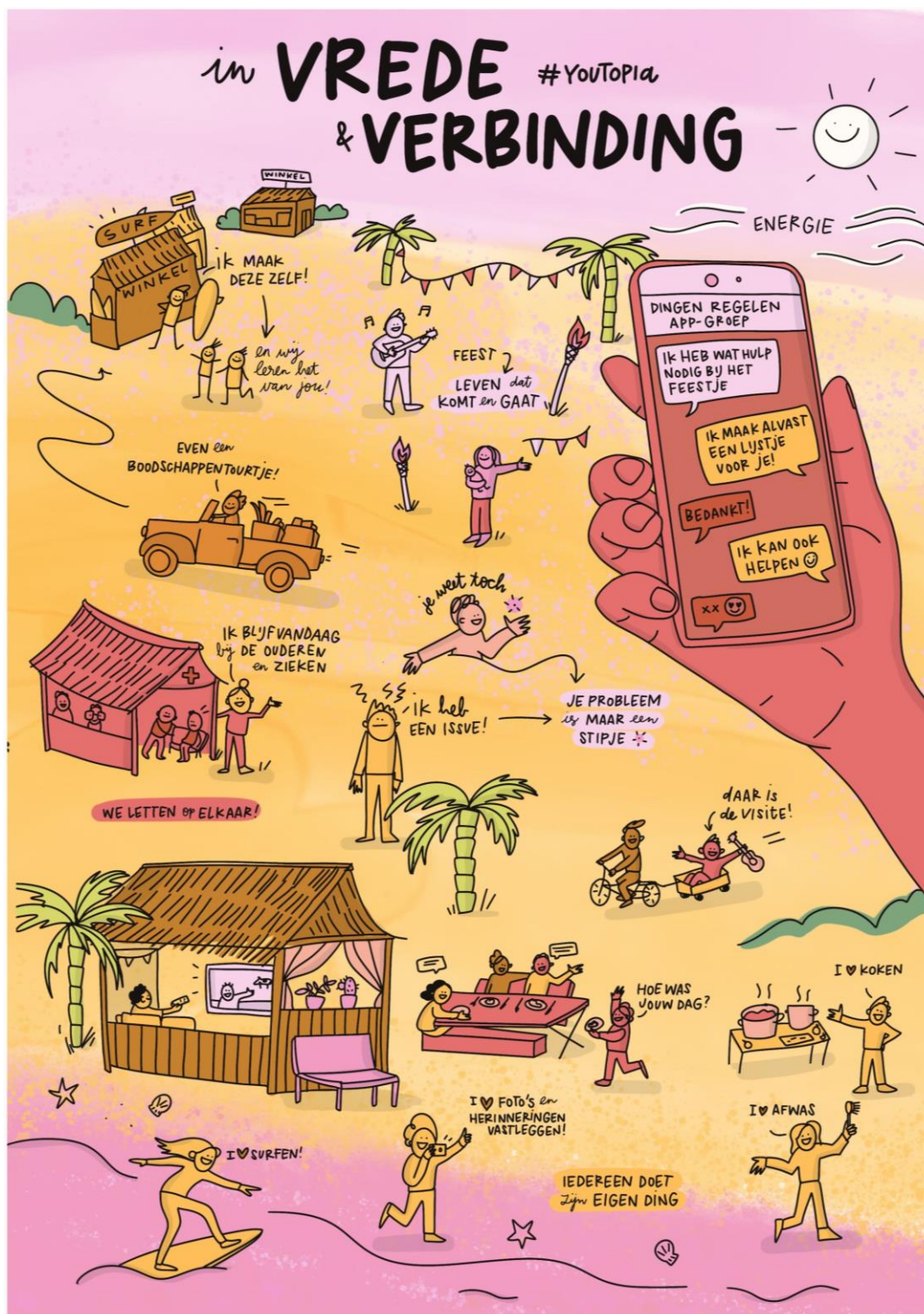




Figure B15

Youtopia No. 5 Non-Green Condition

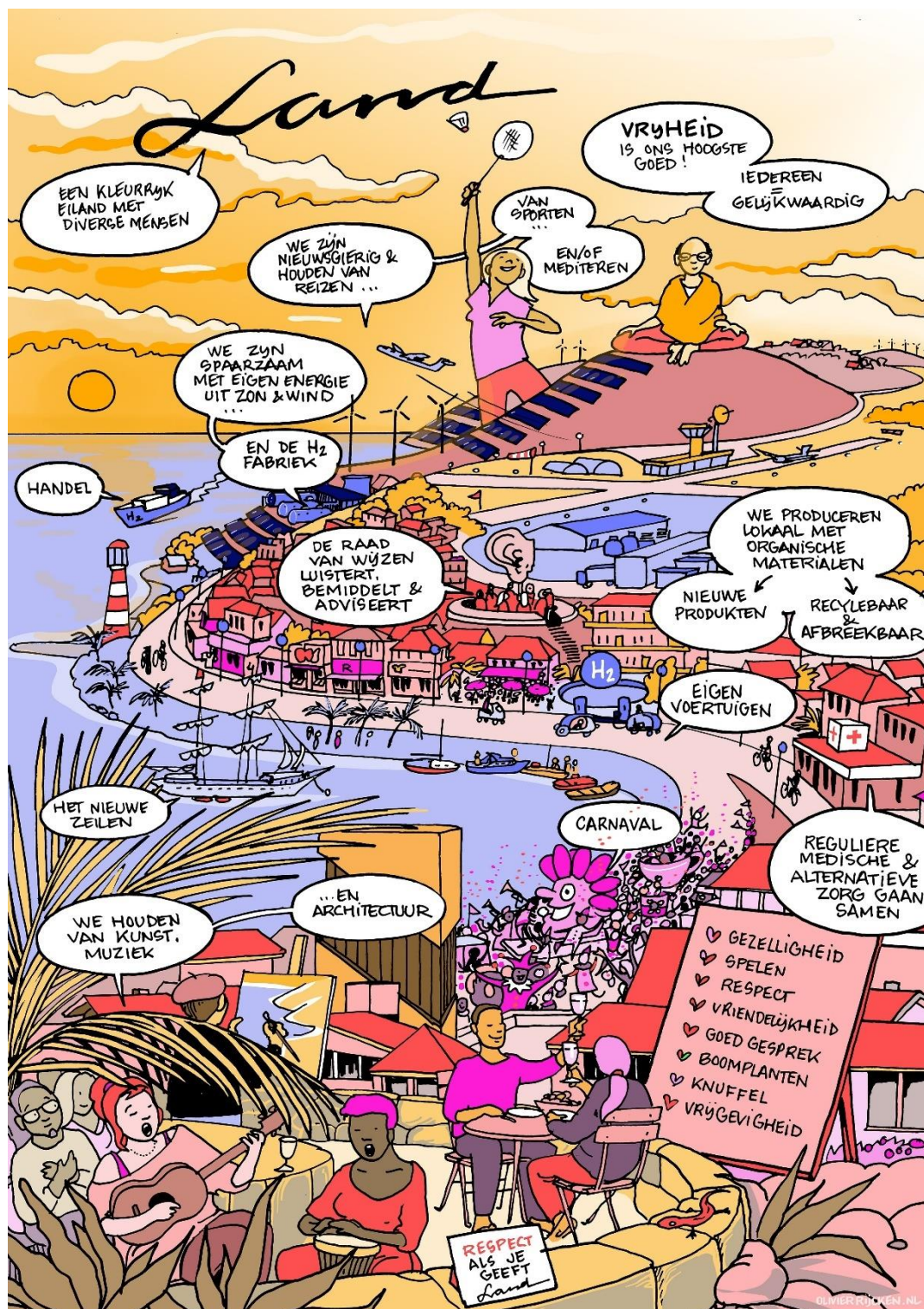


Figure B16

Youtopia No. 6 Non-Green Condition

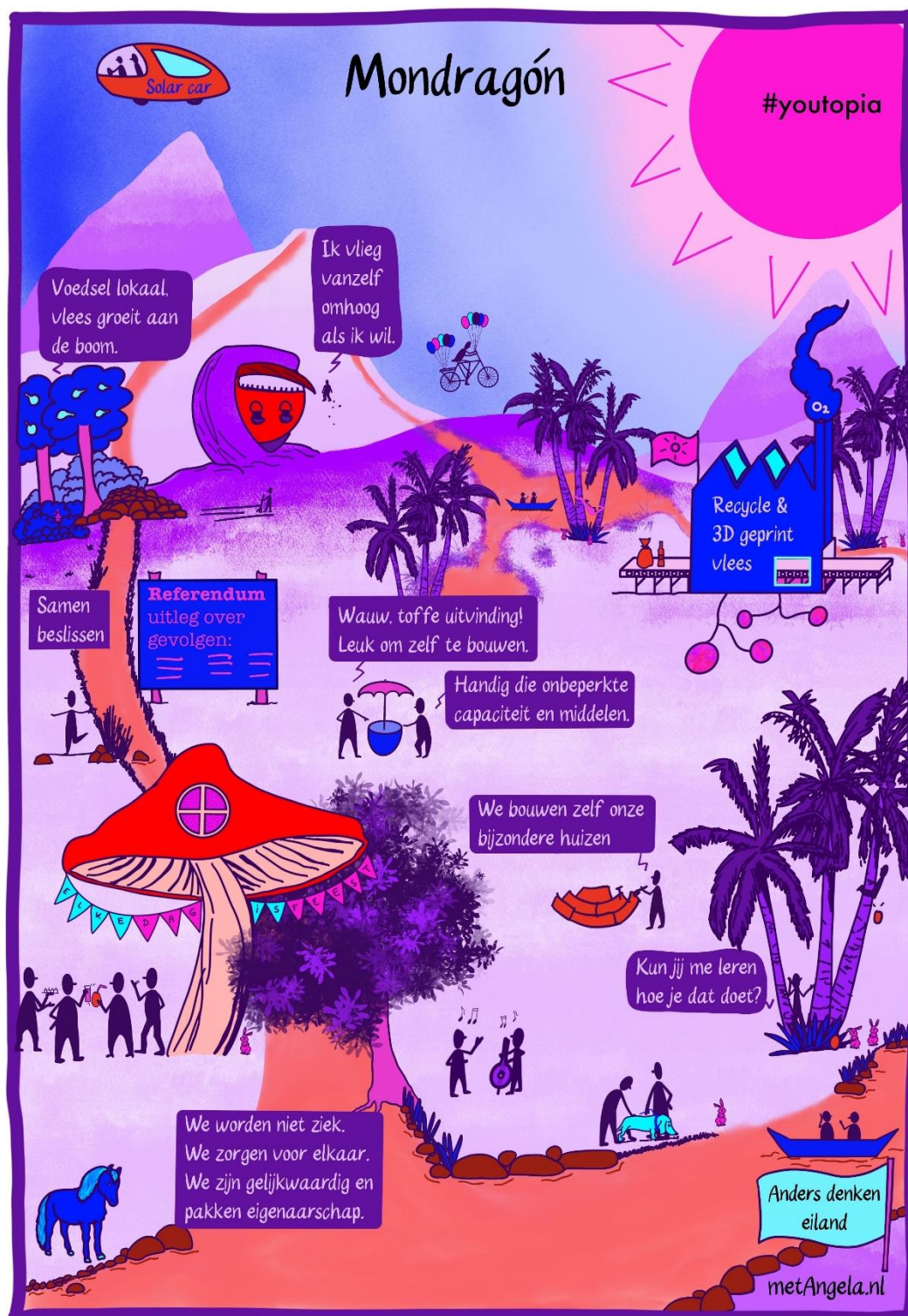


Figure B17

Youtopia No. 7 Non-Green Condition



Figure B18

Youtopia No. 8 Non-Green Condition

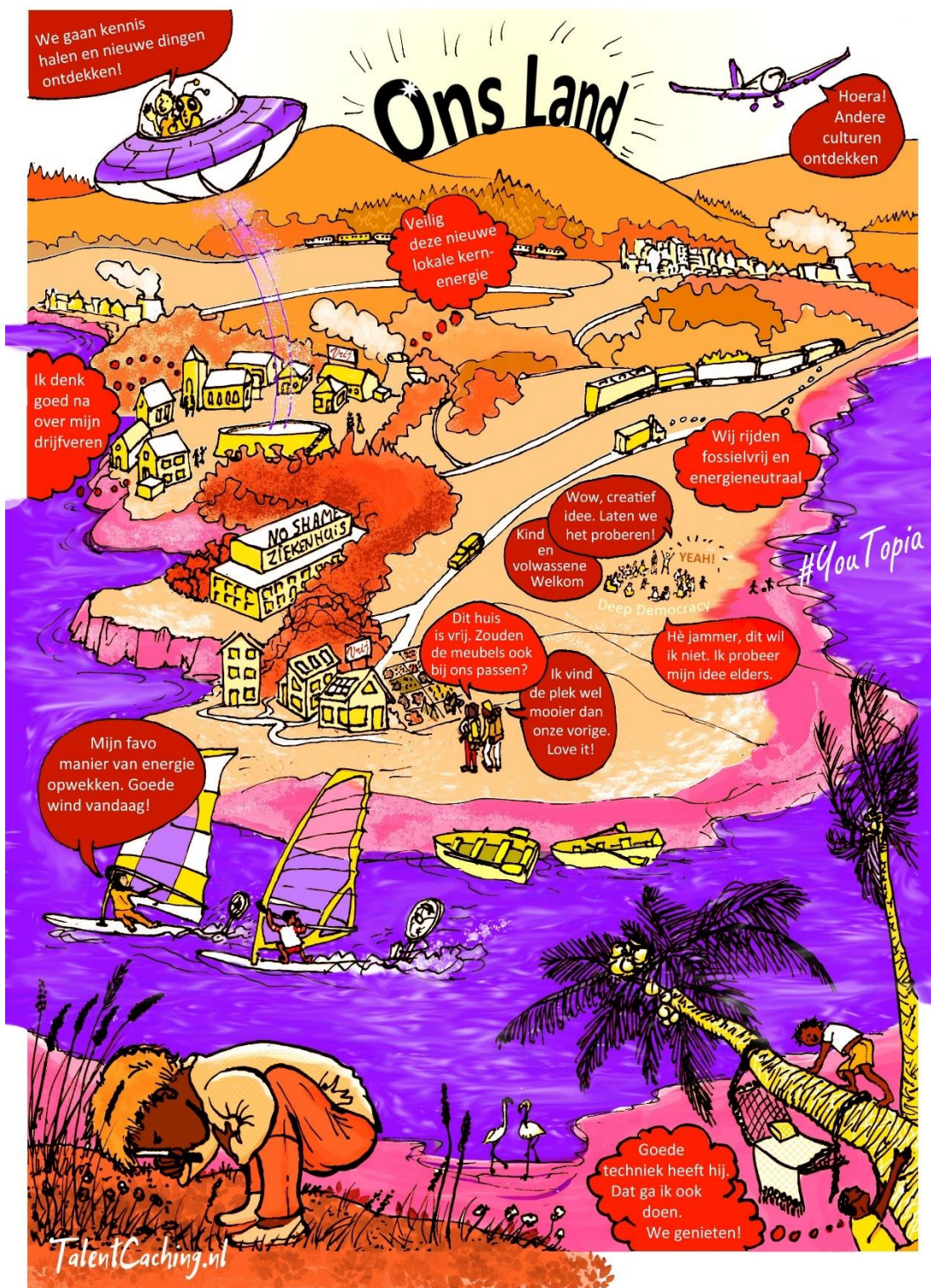


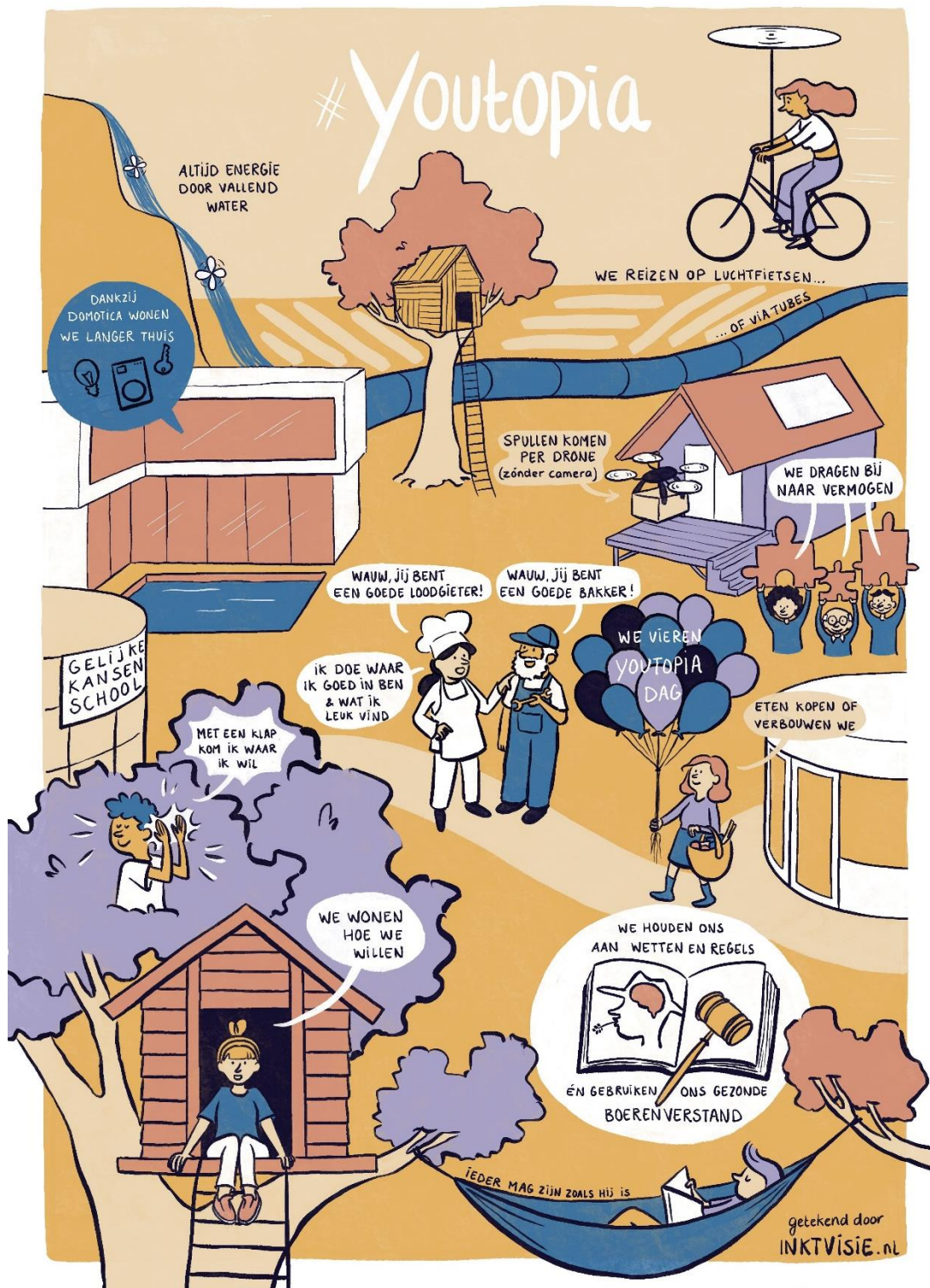
Figure B19

Youtopia No. 9 Non-Green Condition



Figure B20

Youtopia No. 10 Non-Green Condition



### Appendix C: Test Results for ANOVA Assumptions

**Table C1**

*Shapiro-Wilk Test Results*

Variable	Condition					
	Green		Non-green		Control	
	<i>W</i>	<i>p</i>	<i>W</i>	<i>p</i>	<i>W</i>	<i>p</i>
Perceived biospheric value endorsement	0.93	.075	0.97	.547	0.90	.014
Individual PEBI	0.99	1.000	0.95	.148	0.98	.799
Collective PEBI	0.98	.763	0.93	.063	0.96	.329
Environmental policy support	0.97	.549	0.93	.052	0.95	.178
Perceived representativeness	0.88	.004	0.87	.002	-	-
Centred perceived biospheric value endorsement (mRat)	0.96	.432	0.98	.852	0.92	.044

*Note.* PEBI = pro-environmental behavioural intentions.  $n = 28$  for the green condition,  $n = 29$  for the non-green condition, and  $n = 27$  for the control condition.

**Table C2**

*Levene's Test Results*

Variable	<i>F</i> (2,81)	<i>p</i>
Perceived biospheric value endorsement	0.75	.476
Individual PEBI	2.11	.128
Collective PEBI	1.78	.175

Environmental policy support	0.36	.699
Centred perceived biospheric value scores (mRat)	0.98	.381

---

*Note.* PEBI = pro-environmental behavioural intentions. The reported test results are based on the median.  $n = 28$  for the green condition,  $n = 29$  for the non-green condition, and  $n = 27$  for the control condition.