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Aalto University
School of Arts, Design
and Architecture



Low-Carbon Good Life

The Social and Well-Being Effects
of 1.5 Degree Lifestyles



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ni, jostavälisesti — Minä tiedän. Kaikki muuta
voikeasti jos haluaa antaa esteitä, kantas näi
mutakaan ja pitää omiaan. Minä vain katson
niitä — ja kun lähdän lähen, ovat ne minulle pään-
ien. Minusta se on hauskempaa kuin matkailuun
rauhinminen.
— Minä olin väenut pitää ne silloin, kun
Nipsu saati synkän. Ei ole oikeastaan syytä väen
kattella suola kuin koskettaa niitä ja tietää ne
omikseen.
— Kyllä ne varmasti löydämme uusia arhte.
Muunpeikko lähetti. Ei viittä serra enää. Tule
Nipsu, sillä tule kylä.
Ja niin he riehkiivat mukavasti ja hienosti suu-
sina hetki pään pimeisiin pään kante.

VIIDES LUKU



Nuuskamäikkunen tuli pötkön
hauskasti. Hän otti kauhunpötkön
silloin, josta he eivät koskaan ai-
kacemmin olleet kalleet.
Hän otti kauhunpötkön ja terti
huorja joutui.
Näytti siltä, että hän jokin oli
villakkaan. Se veti nopeasti ja
muiden puolesta siellä heillä se
oli nyt kapeampi ja raskaampi kuin ennen. Joka päivä tulivat dreetit ja purppu-
ro

ranväriseet vuoet yhä selkeämpinä näkyivät. Näiden
huput kohautti tuoran pilviin ja maan yllä lepäsi
jatkuvasti aivan kuin raskas pelti.
Ettäni aamua Nuuskamäikkunen istui päänsä kallel-
vedessä vuoteeseen pötkö.
— Minä muistan, hän alkoi ja pani päänsä kallel-
leen. Silloin Nipsu ja Muunpeikko siirtyivät heti
hänne hokeen pötkö.
— Muistan muun, missä oli tuomia lähteitä. Muun-
kamäikkunen kertoi. Muunpeikko oli muutama lauvasta,
ja lauvasta alla jyrvi ystä päivää. Maa näet nauttii
siellä tiestä ja liikkui tuomaan uutta.
Kallit olivat pötkönsä ympärillä, josta nähtiin aino-
den yläpuolella oli epätodellista.
Minä tulin sinne illalla. Hyvä paikka. Ruuan val-
mistaminen kävi siellä nopeasti. Tarvitti vain täytel-
kään lähteestä kuumalla vedellä.
— Eikö siellä poltanut itseään kauhasta, kyyti
Nipsu.
— Minä tulin puujaloilla. Nuuskamäikkunen sa-
moi. Puujaloilla voi liikkua vaikka kalleiden ja kalle-
jen yli tahansa. Vaikka tahansa silloin täytyy varoa,
etteivät ne tartu pötkönsä.
No niin, tulin sinne juuri kun alkoi pimeä. Joka
paikassa kiehui ja höyrysti, että aivan kukaan ei
olentia, ei aivan kukaan niistä kukaan nähty mis-
säin. Ja se oli heräsi, maa, jota nähty pinnan alla.
Että karkattiin aivan minun edessäni kova-
riiten ja karjien, ja siitä syöksyi pötkönsä tulle-
vattavia saavuttavia.

*“It feels good to borrow books from the library
and to repair objects, visit a museum
and look for edible plants,
go berry and mushroom picking.”*

*“Old objects and second hand shops,
sewing and repairing, gardening etc.
have always been a part of my life
and I don’t feel like I’ve given anything up.”*

*“I learned to repair socks, it was awesome!
Walking is the best and quite therapeutic.
Travelling by land you see and experience
more than on a plane.”*

“My family is quite conservative so for example recycled, vegan or charity gifts cause controversy, politicization and me being stigmatised.

On the other hand my vegan roommates and school friends studying social sciences have made me almost vegan as well.”

“It feels mentally heavy to have to justify my choices, and that people think I’m difficult and somehow radical.”

“I feel conflicted, because I am inspired by the low-carbon lifestyle practices of others, but I feel awkward sharing mine with other people. I’m afraid of making them feel guilty, even though I know that talking about them could spread the lifestyle to others.”

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Abstract

The average lifestyle carbon footprint in Finland is over 10 tons, and the 1.5 degree lifestyles goal is for it to be reduced to 2.5 tons by 2030. The challenge is reaching both this and a high level of well-being.

I studied people whose carbon footprints are already at this level, and the social and well-being effects of living low-carbon. I did a survey with over 400 respondents who aim to live low-carbon in Finland, and interviewed six. Over 200 survey respondents had lifestyle carbon footprints of 3.2 tons or less, with an average of 2.5 tons. Most of these respondents were tied to fossil based energy systems, had diets with reduced animal products, didn't use a car, and avoided buying new things.

Reduced consumption did not equal reduced well-being. The quality of life had improved with a low-carbon lifestyle for 67%, and stayed the same for 33%. Other most common well-being benefits were increased consumption of vegetables and increased emotional well-being.

Humans are social, and consumption practices are related to social norms and identities. Low-carbon lifestyle practices have both positive and negative social effects. Some effects are related to gender, and straight cis men also had larger footprints on average than women, LGBTQ+ men and non-binary people. The negative social effects sometimes caused people to avoid low-carbon practices and talking about them. Yet social spreading of low-carbon practices was very common.

Based on current low-carbon lifestyles and their effects, with the three horizons framework, and for four interviewed individuals, I visioned reducing the negative and increasing the positive effects, imagining low-carbon good life in 2030.

Tekijä Daniel Leiviskä

Otsikko Vähähiilinen hyvä elämä – 1.5 asteen elämäntapojen sosiaaliset ja hyvinvointivaikutukset

Laitos Muotoilun laitos

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Vuosi 2021 **Sivumäärä** 81 **Kieli** Englanti

Avainsanat kestävät elämäntavat, hiilijalanjälki, hyvinvointi

Abstrakti

Suomalaisten keskimääräinen elämäntapojen hiilijalanjälki on yli 10 tonnia, ja 1,5 asteen elämäntapojen tavoite on pienentää tämä 2,5 tonniin vuoteen 2030 mennessä. Haaste on saavuttaa sekä tämä että korkea hyvinvointi.

Tutkin ihmisiä joiden hiilijalanjälki on jo tällä tasolla, ja vähähiilisten elämäntapojen sosiaalisia ja hyvinvointivaikutuksia. Tein kyselyn johon vastasi yli 400 ihmistä jotka pyrkivät elämään vähähiilisesti Suomessa, ja haastattelin kuutta. Yli 200:n vastaajan hiilijalanjälki oli 3,2 tonnia tai alle, keskimäärin 2,5 tonnia. Heistä suurin osa oli kiinni fossiilisiin pohjautuvissa energiajärjestelmissä, söi vähennetysti tai ei lainkaan eläintuotteita, ei käyttänyt autoa, ja vältti uusien tavaroiden ostamista.

Kulutuksen vähentäminen ei vähentänyt hyvinvointia. Elämänlaatu oli vähähiilisellä elämäntavalla parantunut 67 %:lla, ja pysynyt samana 33 %:lla. Muut yleisimmät hyvinvointi-hyödyt olivat kasvanut kasvisten kulutus ja kasvanut emotionaalinen hyvinvointi.

Ihmiset ovat sosiaalisia, ja kulutuskäytäntömme liittyvät sosiaaliin normeihin ja indenteetteihin. Vähähiilisillä elämäntavoilla on positiivisia ja negatiivisia sosiaalisia vaikutuksia. Jotkin niistä liittyivät sukupuoleen, ja cis-heteromiehillä oli myös keskimäärin korkeammat hiilijalanjäljet kuin naisilla, seksuaali- ja sukupuolivähemmistöihin kuuluvilla miehillä, ja muunsukupuolisilla. Negatiiviset sosiaaliset vaikutukset aiheuttivat joskus vähähiilisten elämäntapojen ja niistä puhumisen välttelyä. Vähähiilisten elämäntapojen sosiaalinen leviäminen oli kuitenkin yleistä.

Nykyisten vähähiilisten elämäntapojen ja niiden vaikutusten pohjalta, käyttäen kolmen horisontin työkalua, ja neljälle haastatellulle yksilölle, visioin negatiivisten vaikutusten vähentymisen ja positiivisten lisääntymisen, kuvitellen vuoden 2030 vähähiilistä hyvää elämää.

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About ORSI

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About the Author

I am a queer, able-bodied, white, Finnish-speaking person from an underclass background, living in Helsinki. My pronouns are they/them or he/him, both being acceptable to use. My professional background is in visual communication design. I have been living low-carbon, with a footprint of around or below 2.5 tons, for several years.

1 Introduction

I.I

The Challenge

“In an increasingly inequitable and ecologically full world, living well within limits thus becomes the core challenge of our time.”

Fuchs et al. (2021)

The Finnish Government and many municipalities have a goal to be carbon neutral by 2035. These are goals for our area based emissions, which are already slowly declining. But they don't include our outsourced emissions, which are 30% larger. Most of these emissions, 66%, are linked to household consumption, i.e. our lifestyles, and have not decreased. (Syke, 2019.)

Finland is the happiest country in the world, with life satisfaction of 7.9 out of 10 (Helliwell et al., 2021), with the second happiest Iceland coming clearly behind at 7.6. No country in the world has been able to reach a high level of well-being without going over ecological boundaries.

The average lifestyle carbon footprint in Finland is over 10 tons of CO₂e, and needs to be reduced drastically. To stay below the 1.5 degree goal, the targets are 2.5 tons by 2030, 1.4 tons by 2040, and 0.7 tons by 2050. (IGES et al., 2019.) In

Finland this means a reduction of over 70% in less than a decade, and over 90% in under 30 years.

While technological development and changes in consumption have reduced Finnish lifestyle emissions, the amount of money spent has increased so much that in total consumption emissions have increased (Syke, 2019). We might not be able to decrease our emissions enough with just technological innovations, but we need to also consider our economic system and social structures.

Using the Sitra lifestyle test, a survey, and interviews, I studied forerunners with lifestyle carbon footprints already at the level of the 2030 goal. Reducing their footprint has increased their quality of life, but has also had some negative social effects, as low-carbon practices break social norms. I also visioned how our structures could be changed to decrease their emissions further and increase their wellbeing.

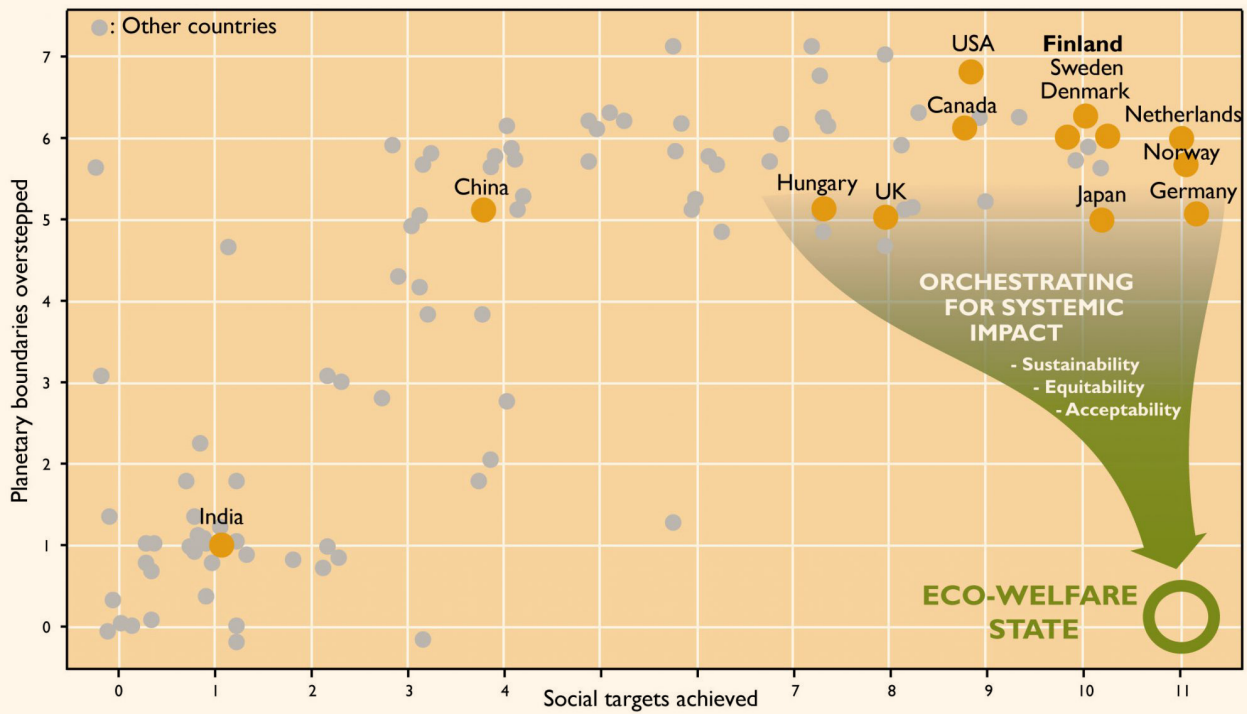


Figure 1 Not a single country in the world has achieved a high level of well-being in an ecologically sustainable way. Finland is in the upper right corner, and the aim is in the lower right corner. By Syke & Sitra, modified from O'Neil et al. 2018 (ORSI, 2021).

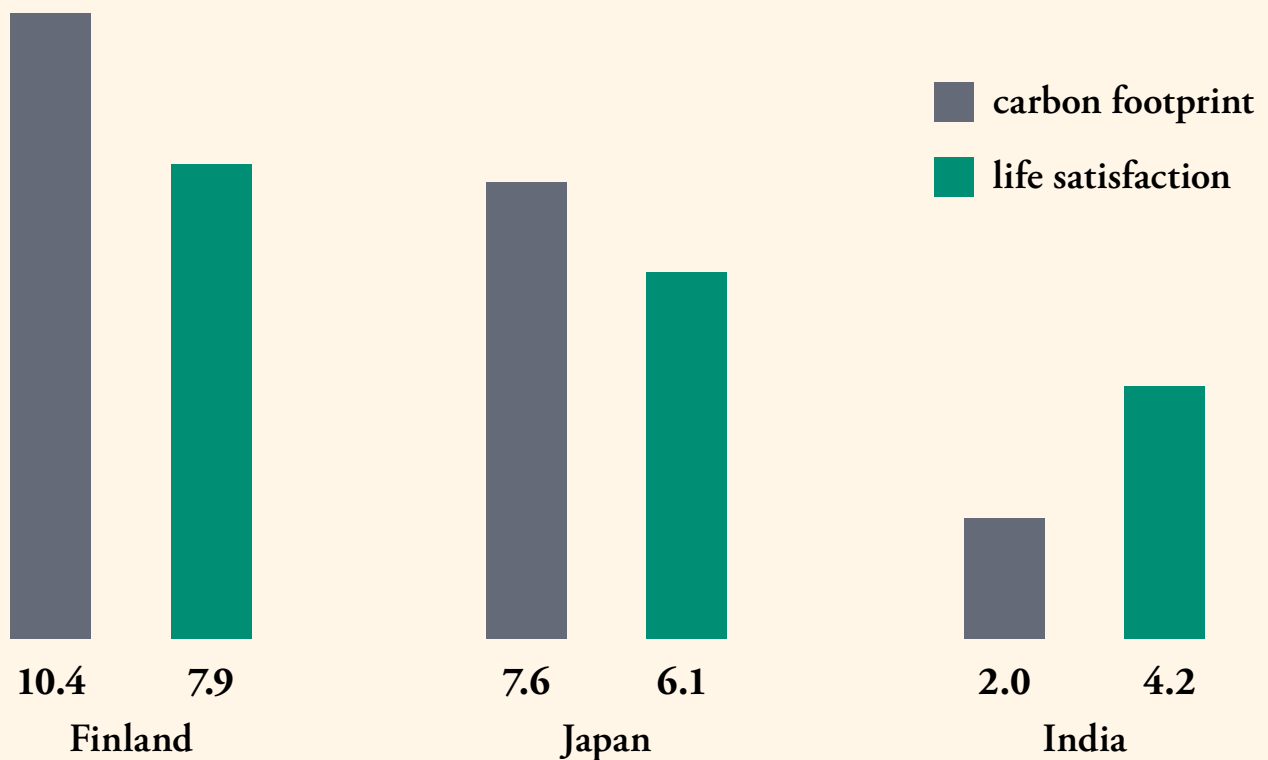


Figure 2 Life satisfaction (Helliwell et al., 2021) and lifestyle carbon footprint in CO₂e (IGES et al., 2019) on average in Finland, Japan, and India as example countries.

Research Questions

First Research Question

How do people with low lifestyle carbon footprints live?

The 1.5 Degree Lifestyles report (IGES et al., 2019) describes the emissions of the current Finnish average consumption, and defines 2.5 ton average carbon footprint as the goal for 2030. I looked at the lifestyle practices of people whose footprints are already at this level.

Based on 1.5 Degree Lifestyles, I focused on the main categories and largest sources of lifestyles emissions for Finns: heating method in housing, car-use in transportation, and animal products in diet, and also considered other consumption. I aimed to both make it visible that low-carbon life is possible and to find out in what ways it is and can be done, and by what kinds of people, with our current systems.

With a survey and using the Sitra lifestyle test I was able to reach over 400 people who aim to live low-carbon and have below average footprints, over 200 of whom had footprints of 3.2 tons or below.

Second Research Question

What are the social and well-being effects of low-carbon lifestyle practices?

Based on O'Brien's (2018) three spheres of transformation and Raworth's (2017) doughnut model and idea of people as social adaptable humans, I looked at the well-being and social aspects of low-carbon lifestyles, instead of focusing in more detail on the different practical and technical arrangements of low-carbon consumption.

I looked at well-being mainly through life satisfaction and quality of life, work and rest, and social relationships. With social effects I looked for positive and negative effects that might make low-carbon lifestyles easier or harder to adopt, maintain or spread, including the social spreading of low-carbon practices, and the effects of gender norms.

With the survey and by interviewing six of the respondents, I found well-being benefits, and negative and positive social effects.

Third Research Question

How can emissions be reduced and well-being increased in Finland to enable low-carbon good lives?

Based on the findings of the survey and interviews, I visioned a desirable future, using the three horizons framework of Sharpe et al. (2016), and by making personas based on four of the interviewees.

With the visioning I aimed to tie the findings of the study and the forerunner point of view to larger societal structures and change. I chose to vision the year 2030, and used the three horizons to look at societal level change, and the personas to vision the level of individuals.

With the forerunner point of view and looking at both the societal and personal levels, I could look beyond reaching the 2030 lifestyle carbon footprint goal with low-carbon practices, and focus on changing structures beyond individual control affecting our emissions and well-being, while also showing individuals as active in creating social change and having good low-carbon lives.

2 Background & Literature

2.1

Reduction Potential of Finnish Lifestyle Carbon Footprints

Current lifestyle carbon footprints in Finland are too large, but this also means there is a lot of reduction potential. Finnish attitudes are also positive towards the change. The 1.5 degrees framework gives an overview of the current situation, a goal to strive towards, and how it can be reached.

2.1.1

Current Lifestyle Carbon Footprints in Finland

The average Finn has a lifestyle carbon footprint over 10 tons. (IGES et al., 2019; Nissinen & Savolainen, 2019.)

Most of this comes from three main categories: housing, nutrition and mobility.

Of our housing emissions, 83% come from energy use, 16% from construction and maintenance, and just 1% from water. The largest emission source is district heating, causing 38% of housing emissions. Electricity, including its use for heating, causes 34%. (IGES et al., 2019.) Average living space in Finland is 41 m² per person, less for larger households, and for those living alone the average is nearly 60 m². Over 40% of Finns live alone. (Tilastokeskus, 2019.) The average lifespan of residential

buildings is 58 years (Huuhka & Lahdensivu, 2016).

With nutrition, the largest cause of emissions is meat, causing 37% of our food emissions. Even though meatless products and diets have been a growing trend for years, our meat consumption has still continued growing during the last decades, and currently Finns eat about 80 kilograms of meat per year per person (Lihatiedotus, n.d.). In Finland dairy is almost as large a cause, causing 36% of our nutrition emissions, due to the carbon intensity of dairy and the amount we consume (IGES et al., 2019). Our excessive dairy consumption is related to historical and systemic reasons, such as public funding and marketing related to dairy milk being

offered at school and national identity (Silfverberg, 2016). Cereal, fruits and vegetables cause just a tenth of our food related emissions, and beans we eat so little they cause less than a percent of the emissions. While being just a third of the food we eat in kilograms, animal products cause 78% of our food related emissions. (IGES et al., 2019).

Finns drive a lot, over 11 000 km per year. This, combined with the high carbon intensity of driving, causes 80% of our mobility emission to come from private car use. Finns also fly over 2000 km per year, with 13% of mobility emissions coming from aviation. The use of public transport, cycling and walking is low, just 14% of our kilometers moved. (IGES et al., 2019.) The COVID-19 pandemic has had large effects on mobility, but we don't yet know what the long term effects will be.

The rest of consumption emissions come from other consumption: goods, leisure and services. What is included in this category differs between sources, and there are not as clear largest causes for emissions as in the three other categories. But it's relevant to note our high consumption of goods, and also the materiality of services.

There are no large differences in footprint sizes between different age

groups or between people living in cities and countryside in Finland. The greatest variation can be seen when looking at income. While in Finland income equality is high, the average footprint of the highest income group in Finland is still more than double that of the lowest income group. Still even the lowest income group has emissions nearly three times the 2030 target of 2.5 tons. (Nissinen & Savolainen, 2019.)

At the same time, 72% of Finns think that products and services that enable low-emission life are too expensive (Kantar TNS, 2019). While we also need affordable low-carbon products and services so that sustainable consumption is not only a privilege of the rich, it is important to see that we do not generally need more consumption, but less. For those who can afford them, more expensive low-carbon options can make them have less money for carbon intensive consumption.

2.1.2

Climate Actions and Attitudes of Finns

Finnish attitudes toward individual climate action are part of the background of the current situation, but also part of the social context of living low-carbon, and part of the context of social spreading of low-carbon practices.

Attitudes are also part of the potential and difficulty of reducing emissions.

Finnish carbon intensity is not based on values and desires of showing financial success with large meals, fancy houses, fast cars and expensive products. Finns dream of quite simple lives, and consider free time and spending time in nature desirable luxuries over expensive products (Nelskylä, 2018).

Almost 80% of Finns think their personal lifestyle is already sustainable (Heikkilä et al., 2020). People don't feel like they are overconsuming, which might be because our emissions don't come from buying excessive amounts of luxury products, but from filling our basic needs and doing very mundane things: living in a house, eating food, driving a car. Lifestyles that produce 10 tons of emissions look and feel normal and acceptable.

There is strong citizen support for climate action in Finland, with 70% wanting the government to do efficient climate politics (Kantar TNS, 2019).

Over 40% say they have already changed their own behaviour for climate reasons. Of these over half say they have reduced their electricity consumption, and nearly half say they have reduced their consumption of goods. Over 40%

of those who use a car say they have reduced driving, and over 40% say they have reduced their consumption of animal based food. (Kantar TNS, 2019.)

Many are also planning to do changes in the future. When asked about the next five years, almost half say they are going to reduce their consumption of animal products, and over 40% say they are going to reduce driving, while almost 20% say they are going to get rid of their car completely (Kantar TNS, 2019).

People saying they are going to do something, does not mean they will, but self-identity, how people think they will behave and what kind of people they think they are, affects how they behave. Even if they have not behaved this way before (Jackson et al., 2005, pp. 76–77).

Many Finns say they are open to lifestyle changes, but as they also commonly view lifestyles very high in emissions as sustainable, there is both great potential and great difficulty in reducing their carbon footprints.

2.1.3

1.5 Degree Lifestyles

1.5 degree lifestyles (IGES et al., 2019) is a framework defining the change needed in our lifestyles and their emissions to stay within 1.5 degrees of



Figure 3 *Finnish average lifestyle carbon footprint and lifestyle carbon footprint targets to stay below the 1.5 degree goal, in tons of CO₂e, adapted from IGES et al. (2019).*

global temperature rise. It sets the global lifestyle emissions targets as 2.5 tons by 2030, 1.4 by 2040, and 0.7 by 2050.

The ways to reduce emissions are divided into three categories: absolute reduction, efficiency, and modal shift. Absolute reduction means reducing something, for example driving less by

working from home. Efficiency refers to changing the carbon intensity without changing the way of consumption, for example producing district heating with renewables, and modal shift means changing from mode of consumption to a less carbon intensive one, for example to a vegan diet from an omnivorous one. (IGES et al., 2019.)

Specific changes to lifestyles that are the most impactful are country specific, and in Finland reducing animal product consumption (especially meat and dairy), reducing driving (or switching to an alternative fuel), and switching to renewable heating are the most impactful changes. An adoption rate of 75% of the solutions is needed to reach the 2030 goal. (IGES et al., 2019.)

Pathways to 1.5 degree lifestyles by 2030 (Demos Helsinki & Sitra, 2020) builds on the 1.5 degree report (IGES et al., 2019), smart consumption motivation profiles (Palmu & Sitra, 2018), and SPREAD sustainable lifestyle scenarios (Demos Helsinki, 2012).

It has four fictional personas and their pathways to 1.5 degree lifestyles, illustrating what the lifestyle changes needed to reach the 2.5 ton goal by 2030 could look like for different individuals. It shows how there are different ways to reach the goal, not just one.

2.2

Good Life Within Planetary Boundaries

Defining what is a sufficient level of consumption and what is a good life are needed to find ways to live that have very low environmental impacts but are also acceptable or even desirable. Reducing the environmental impacts of consumption requires defining the upper limits for it. But to also consider human well-being and fairness, lower limits are also needed. And to reach good lives within planetary boundaries, we need to find ways that support well-being with smaller impacts on the environment.

2.2.1

Doughnut Model

Our current system aims to produce well-being with financial growth and is ecologically unsustainable. Raworth's (2017) growth agnostic doughnut model for a regenerative and distributive economy redefines the function of the economy as supporting human well-being within planetary boundaries. A safe and just space for humanity is between the ecological ceiling and the social foundation. It is a model that not only redefines the economy, but sustainability, and a desirable future for humanity.

O'Neill et al. (2018) use the doughnut model to illustrate the current situation in different countries. They show that no country in the world is able to provide well-being while staying within the planetary boundaries. Their graph of Finland's doughnut (figure 5) shows how Finland is over all of the planetary boundaries except fresh water use, and

how our social foundation is perfect apart from employment being slightly under the limit. But as the assessment is based on specific indicators, it doesn't cover everything. Equality for example is measured with the gini index, and refers to income equality, which is high in Finland. Not visible in the graph is the serious human rights issues we have related to minorities such as BIPOC and gender minorities.

But on average our well-being is currently very high. According to the World Happiness Report (Helliwell et al., 2021), in 2020 Finland was the happiest country in the world, with average life satisfaction of 7.9, with Iceland coming in second at 7.6, and Denmark, Switzerland and Netherlands third, fourth and fifth, all a bit above 7.5, and Norway and Sweden coming next below 7.4. With this much lead on the rest of the world in happiness,

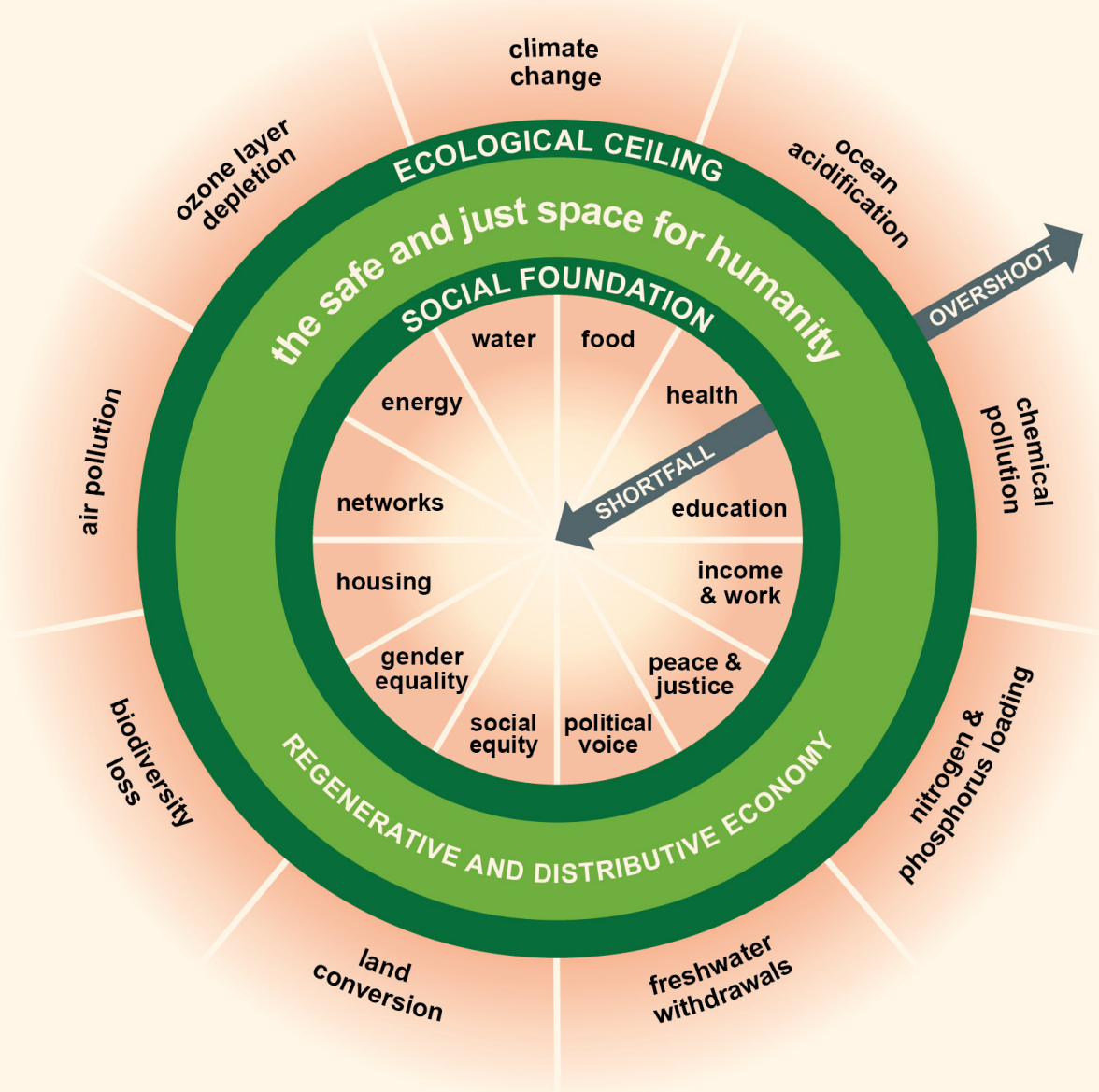
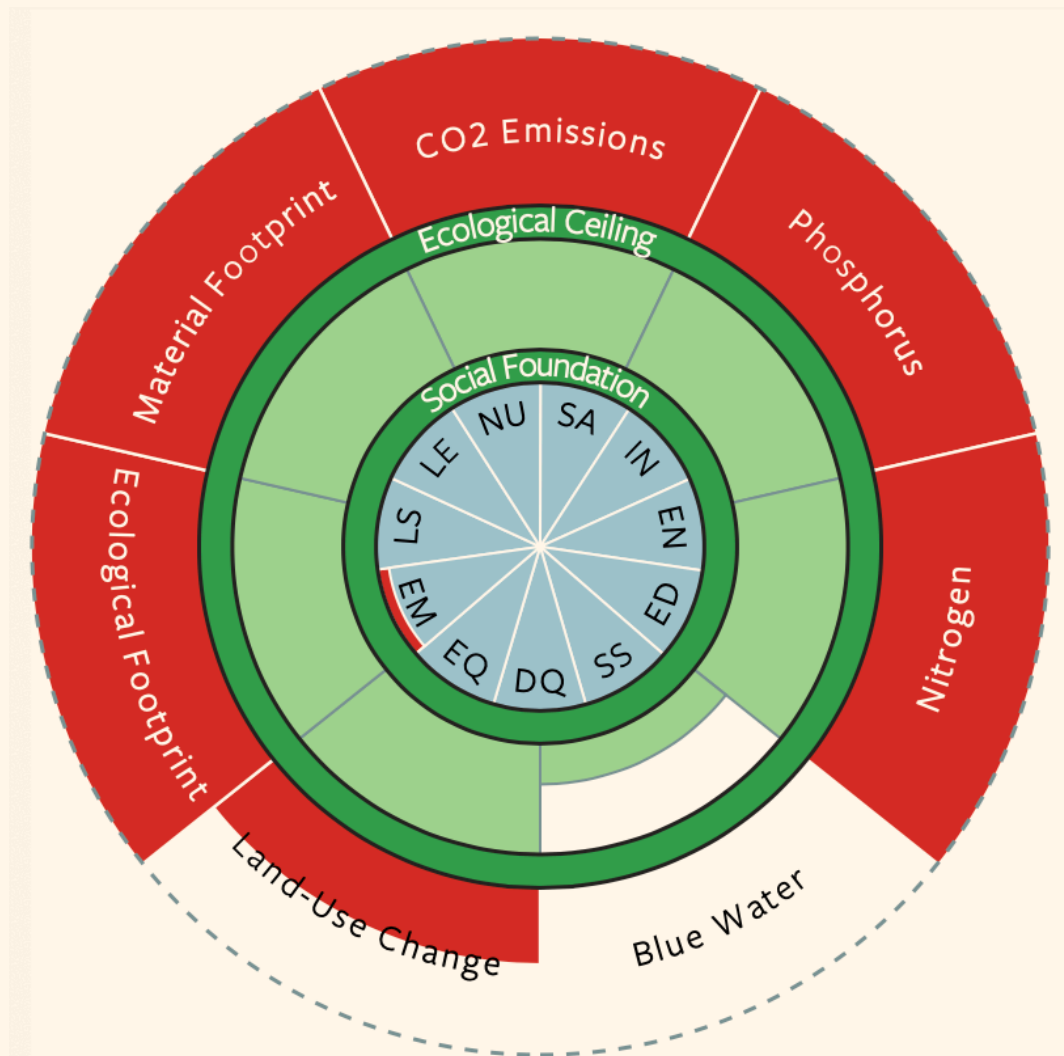


Figure 4 Raworth's (2017) doughnut model for a regenerative and distributive economy, where a safe and just space for humanity is between the social foundation and the ecological ceiling.



LS - Life Satisfaction	ED - Education
LE - Healthy Life Expect.	SS - Social Support
NU - Nutrition	DQ - Democratic Quality
SA - Sanitation	EQ - Equality
IN - Income	EM - Employment
EN - Access to Energy	

Figure 5 *Finland's doughnut, with a strong social foundation but overshooting almost all ecological limits. (O'Neill et al., 2018).*

combined with how large our emissions are per person, it would be fair to reduce our emissions even in ways that might also reduce our life satisfaction.

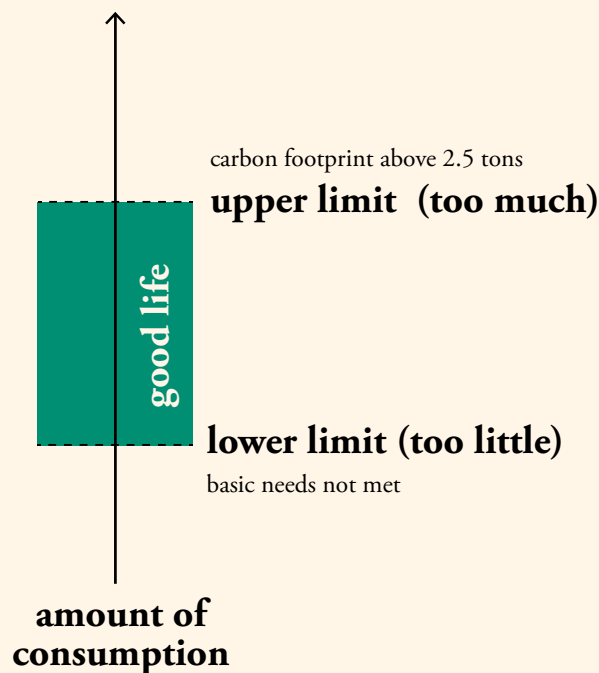
2.2.2

Sufficient Consumption

Consumption corridors (Fuchs et al., 2021) is similar to the concept of the doughnut, in that it defines what is desirable and needed being between an upper and lower limit, but focuses more specifically on upper and lower limits for consumption and the concept of good life rather than the economy. Consumption corridors combine good life and justice with planetary boundaries.

Some amount of consumption is needed to fill our needs, but some consumption practices, patterns and levels can reduce our ability to have a good life. Excessive consumption and related social norms and structures can negatively affect our well-being. And marketing messages us that good life is something that can be achieved later, through further consumption, but we never get there (Fuchs et al., 2021).

We have material needs, as well as immaterial social ones, like the need to belong to a community and to be recognised as valuable. And to be able to have a good life, these need to be met. Currently how well people are able fill their needs is divided unevenly, with some living



Figures 6 & 7 *Sustainable consumption corridor between minimum and maximum limits for consumption (Fuchs et al., 2021) and adapted simplified version for low-carbon good life.*

a life of plenty while others barely survive (Fuchs et al., 2021).

The sufficient minimum budgets (Lehtinen & Aalto, 2018) give a Finnish example of the lower limit, or of our idea of how small an amount of consumption is acceptable. The budgets give examples of the minimum amount of consumption needed to get by, maintain health, and participate in community life in Finland.

Carbon footprints for this level of consumption have also been calculated by Useless (2020). For example the carbon footprint of the sufficient minimums of one person households are around 4 to 5 tons, which is less than half of the national average, but still almost twice as much as the 2030 goal. Similarly in their research looking at material footprints Hirvilammi et al. (2013) show that even the lifestyles of Finnish minimum income receivers are not sustainable if meeting basic needs. The only person they found to have a sustainable material footprint was without a permanent residence.

It seems that at the moment in Finland our minimum acceptable level of consumption is higher than the maximum level based on our emissions. There seems to be no corridor, no space for good life.

The minimum budgets are based on mainstream practices, so their emissions

could be decreased with modal change even without reducing the amount of consumption. But to get our lifestyles in line with the 1.5 degree target, both changing and reducing our consumption is needed (IGES et al., 2019). And redefining the amount and types of consumption we see as sufficient and acceptable could help with this.

Reduced consumption and modal change to low-carbon practices does not have to mean reducing our well-being, but can increase it. For example, from the perspective of health, currently Finns eat more meat and less vegetables than recommended, and don't get enough exercise. Plant heavier diets with less meat, and more walking and bicycling instead of driving, can reduce emissions while providing health benefits. And our current system based on financial growth and high-consumption can lead to burnout, and lifestyles of lower consumption would fit well together with more time for rest and meaningful activities.

Reducing consumption should not be understood mean just reducing things from our lives so that there is very little left, but making more space for meaningful and lovely things. Exercise, rest, pleasant activities and relationships are vital for well-being. And while they can be tied to carbon intensive consumption, they don't have to be.

2.3

Social Aspects of Low-Carbon Lifestyles

Reducing emissions is not just a practical challenge of individuals independently changing their behaviour, or even just about infrastructural barriers, but also tightly related to social aspects. Social norms and social identities affect our consumption practices, and vice versa.

2.3.1

Social Humans vs Rational Economic Man

Consumption emissions are often seen as a rather technical problem that we need technological innovations to solve. In addition to technology, market solutions are also often emphasised. These masculine ways to address the issue reflect our image of humans as homo economicus, rational economic men.

O'Brien's (2018) three spheres of transformation remind us to also consider political and personal aspects in addition to the practical in sustainability transformations. The practical sphere refers to behaviour and technical responses. The political sphere includes the physical infrastructure, which is

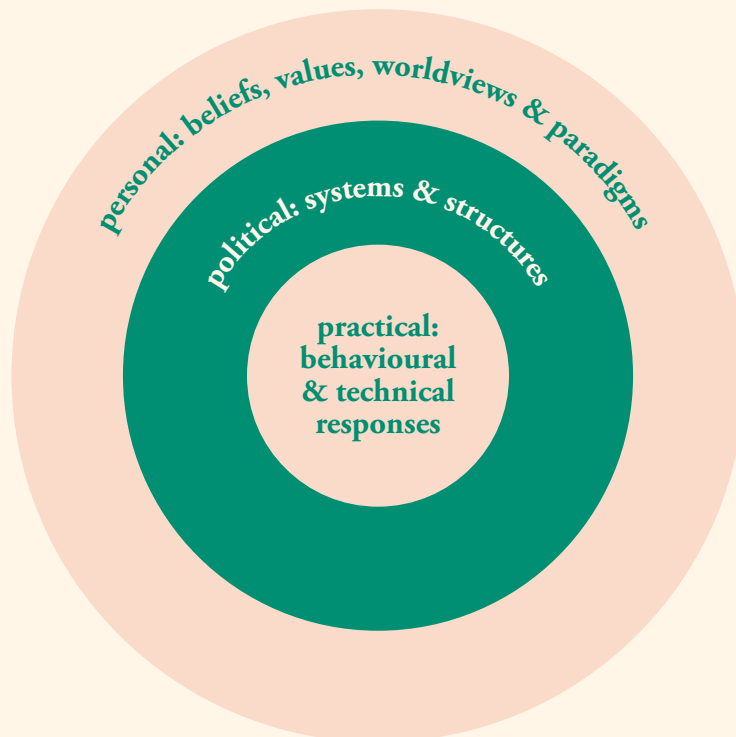


Figure 8 *Three Spheres of Transformation, adapted from O'Brien (2018).*



Figure 9 *Visualisations of rational economic man (on the left) and social adaptable humans (on the right) as images of humanity (Raworth, 2017).*

very relevant and sometimes considered, but also the social structures, which are usually forgotten. The personal sphere includes beliefs, values, worldviews and paradigms, and is where we can place the rational economic man.

Behavioural economics breaks the image of rational economic man by showing we are often not rational at all. In their book *Nudge*, Thaler & Sunstein (2008) describe how choice architecture based on behavioural economics can be used to change human behaviour. Syke (Salo & Nissinen, 2017) has also used this viewpoint, but by focusing on infrastructural barriers and the solutions focused on making low-carbon choices cheap and easy, the focus is still quite technical.

Raworth (2017) suggests replacing homo economicus as the portrait of humanity, and while including nudges, goes beyond irrational economic man. The

new portrait is social adaptable humans, illustrating us as much more than greedy individuals. This new portrait is not static but fluid, not one but many, and changing in appearance like a hologram.

2.3.2

Norms and Social Identity

Instead of consumption behaviour being just a result of free independent choice of individuals, it is strongly affected by social norms. Norms can be descriptive, i.e. what is done, or injunctive, i.e. what ought to be done. Descriptive norms affect our behaviour through our perception of what is normal, influenced by what we see others doing. (Jackson et al., 2005, pp. 58–61). One example of this being used in the context of sustainable behaviour is how in hotels the message most influential in making guests reuse their towels, was that other guests do so (Goldstein, 2008). Injunctive norms affect our behaviour

through social rewards and sanctions (Jackson et al., 2005, pp. 58–61).

Social identity theory explains different behaviours being more or less acceptable, and thus accessible, to different people based on their own perceptions of belonging to certain groups. Humans tend to form social groups, and favour their own group and discriminate against those who are outside it. (Jackson et al., 2005, pp. 79–100)

Minimal group hypothesis suggests that instead of actual differences between social groups, it is the act of forming groups that causes in-group identification and intergroup conflict. People have a nearly universal desire for positive social identity, feeling good about the group we belong to. Discriminating against other groups is motivated by it providing positive social identity through establishing distinction between the groups and enhancing the positive value of belonging to the group. Positive social identity regulates the behaviour of individuals and prevents the fragmentation of social norms, and so strengthens the group. (Jackson et al., 2005, pp. 79–100)

In addition to our behaviour being affected by the norms of groups we feel we belong to, as relevant can be the groups we differentiate ourselves from.

Certain behaviours can be for someone associated with certain groups, and if the person does not perceive themselves as belonging to such group, they can avoid the behaviour for this reason. (Jackson et al., 2005, pp. 79–100).

But people often belong to several different social groups, and a person can have conflicting social influences, making the social context important. The same person can be more likely to have vegetarian food when with some people, and to eat meat when with some others. (Jackson et al., 2005, pp. 79–100.)

2.3.3

Low-Carbon Practices and Gender

One social identity affecting consumption is gender. There is plenty of research on the effect of gender and sustainable consumption, showing that women engage in more sustainable consumption than men (Carlsson-Kanyama et al., 2021; Rätty & Carlsson-Kanyama, 2010; Zelezny et al., 2000).

Much of our cities, products and services are designed for men, and their lifestyles and carbon intensive consumption. One example is snow being plowed first for cars to allow driving to work, which is more common for men (Criado-Perez, 2019). Women on the other hand do

less paid labour and more work in homes for which they are not compensated for (Tilastokeskus, 2010).

An overall pattern in food consumption is that men eat more meat and less vegetables than women. And when looking at their whole consumption, men consume 8–39% more energy than women (Räty & Carlsson-Kanyama, 2010).

In a recent Swedish study men had 16% higher carbon footprint than women, while spending only 2% more, due to men spending more on carbon intensive consumption such as fuel (Carlsson-Kanyama et al., 2021).

Environmentally friendly behaviours are seen as feminine, and men avoid such behaviour to protect their masculine identities. To avoid this, more masculine branding of green products have been suggested as a solution. (Brough et al., 2015). This however does nothing to address the root cause of strict gender binary, toxic masculinity, and sexism, but rather supports these harmful identities and structures.

There is some evidence that the gender difference of sustainable behaviour can also disappear when social, rather than personal, identity is highlighted. Men's sustainable behaviour can increase to

women's level by making them think about others and not just themselves, by for example talking about what we all must do, instead of what single individuals should do (Costa Pinto et al., 2014).

2.3.4 **Pro-Environmental Behaviour as Gender Non-Conformity**

While pro-environmental behaviours are generally considered feminine, there are also some that are considered masculine. Gender non-conformity of pro-environmental behaviour makes people be seen as less likely to be straight, and even their friends being seen less likely to be straight. This causes social distancing by others, due to prejudice and fear of being misclassified as queer. (Swim et al., 2020.)

Queerness can be linked to environmental activism, especially related to food (Sbicca, 2012), and veganism can challenge heteronormativity (Simonsen, 2012).

Vegetarian men are seen by most other men as betraying the social expectations of masculinity, and can face ridicule and social isolation (Bogueva et al., 2020).

Social norms are not just between equal individuals but partly created,

maintained and reflected on societal and systemic levels and by those in power.

While discrimination based on gender is illegal in Finland, laws and medical practices discriminating and not recognising gender minorities make discrimination of people challenging the gender binary still officially practiced and accepted. The gender binary is maintained by erasing non-binary people both physically and officially. There is no official third gender, and to even change from one official gender to another trans people are required to be sterilized or otherwise infertile (Finlex, 2002). For intersex children doctors decide a binary gender for them, performing cosmetic genital surgery to make the childrens' anatomy fit this decision (Kömi, 2015).

While the strict gender binary hits gender minorities hardest, affecting their well-being and ability to live good lives, it limits everyone. It makes breaking gender norms socially sanctioned, including gender non-conforming low-carbon practices.

2.3.5

Social Influence of Low-Carbon Minority on Mainstream

As discussed in the case of gender, carbon intensive practices are mainstream, and low-carbon practices

can break social norms and cause social sanctions. This can make low-carbon practices less attractive to adopt, and can reduce the well-being of those who do adopt them.

In addition to the social context affecting the behaviour of individuals, the individuals can also have an effect on others with their behavior.

One example of the influence of others on sustainable consumption, is how in home energy use reduction, more important than one's own beliefs about energy use and the environment, were their beliefs of their neighbours' beliefs (Jachimowicz, 2018). This relates to social norms often influencing our behaviour more than our personal views.

Social influence has also been studied in the case of flying. Some have given up flying, despite flying still being the norm, and this has affected the behaviour and attitudes of others. Around half of those who know someone who has given up flying for climate reasons say that they themselves fly less inspired by the individual, and around three quarters say it has changed their attitudes towards flying and climate change. (Westlake, 2017.)

Individuals with higher status had a stronger influence (Westlake, 2017). In

addition to getting people with power to adopt low-carbon practices, this effect could also be increased by increasing the social status of those who already have low carbon footprints.

Even more important than status was commitment. Completely giving up flying was considered more influential than just flying less (Westlake, 2017). Those who are more flexible with their lifestyle can have a smaller influence on the behaviour of others than those who are stricter.

But strong practice-based identities can increase the barrier for the majority to adopt sustainable practices (Kurz et al., 2020). This is related to negative stereotypes of sustainable minorities. People for example view stereotypical activists so negatively, that it reduces their desire to engage in activism. The same does not happen with atypical activists. (Bashir et al. 2013).

Others acting ethically can also cause people to feel threatened due to social comparison, and to negatively judge those others. This is related to perceived moral superiority. For example non-vegetarians thinking that vegetarians are better than them, and seeing vegetarians negatively because of this. (Minson & Monin, 2012.)

Guilt is something we tend to avoid causing in others related to carbon footprints. The idea is usually that individuals are not to blame and that causing guilt will only cause unwanted reactions. But guilt can be an important part of moral and empathy. Guilt can tell us we need to change our behaviour, and when we do we get rid of it. Shame on the other hand is focused on the self being unaccepted, and can cause much more negative reactions. (Aaltola, 2019.)

But the influence of minorities is underestimated. This is because while they don't always directly cause others to change their behaviour, they have a stronger impact on private opinions. And those they have influenced, then influence others around them, creating larger change that spreads in social groups. Minorities also challenge the status-quo and self-fulfilling social norms. (Bolderdijk & Jans, 2021.)

Minorities can influence opinions and actions of majority members without realising it. They are most influential when they are seen to belong to the same larger group as majority members, and when their words are supported by their actions. (Bolderdijk & Jans, 2021.)

3 Research Process & Methods

To find people with low carbon footprints, I used an online survey with fixed-choice and open questions, spread on social media, and the Sitra lifestyle calculator to get comparable footprints. I then remotely interviewed six survey respondents, to get the points of view of different individuals, and to discuss the future with them. This combination enabled getting both some numerical data, and detailed human level narratives.

3.1

Carbon Footprint Calculator

I used the Sitra lifestyle test as a way to know the carbon footprints of the survey and interview subjects. I chose it as it is quick and easy to answer, to lower the threshold for answering, and so that the respondents would then still have the time and energy to answer the rest of the survey.

There are many different carbon footprint calculators, and they ask different things and give different results (Lahtinen, 2020).

The Sitra calculator doesn't go into much detail, and also lacks more radical answer options, reflecting the average Finnish lifestyle and the most important changes needed to reduce its footprint. Some respondents for example dumpster dived their food, and this is not something that is considered in Sitra's test.

But most survey respondents had results so clearly below the Finnish average, and the results of all the survey respondents and those with the smallest footprint results were very similar, so while the individual footprints might have variation in their accuracy, it doesn't have any significant effects on the results of this study.

Lifestyle carbon footprint calculators are criticised for their origin, and for their focus on individuals. This caused some to view this study negatively, for example being against sharing the survey link.

3.2

Survey

I conducted a cross-sectional survey targeted to people who aim to live sustainably in Finland. The survey was

online on Google Forms, and spread on social media.

There were no online groups specifically for people with low carbon footprints, but there were groups focused on specific practices low-carbon lifestyle such as bicycling and electric vehicles. The survey link was shared to ten facebook groups focused on low-carbon practices, and on my own Instagram account from where it was shared by private individuals, some sustainability focused influencers and NGOs, and a carbon footprint calculator start up.

As the survey was online and spread on social media, older people and people who are not active on social media, many of whom might have small carbon footprints, are likely to be underrepresented in the sample. The aim was not to get a representative sample, but to find some people with low carbon footprints, but preferably to be able to reach different kinds of people with different kinds of lifestyles.

The survey was originally planned as a way to find at least a few people with low carbon footprints to interview. I didn't know how many people with low carbon footprints there are in Finland, what kind of people they are, or how many of them I could reach. The sample ended being larger than expected.

The survey got 451 responses, 440 after removing doubles and those who had not put in their carbon footprint. The lowest carbon footprint was 1.2 tons and the highest 14.2 tons. Only six had a carbon footprint over the Finnish average. 89% had a carbon footprint of 5 tons or less, and 50% 3.2 tons or less. The youngest respondent was 13, and the oldest 76. Almost 80% of respondents were (binary) women, and only 14% were (binary) men, while 7% were non-binary. Only five respondents were not white, and just 14 had some disability, but 23% were LGBTQ+. 40% lived in the Helsinki metropolitan area, and 63% lived in one of the six largest cities in Finland (Helsinki, Espoo, Tampere, Vantaa, Oulu, Turku).

The questions were divided into nine sections: background, housing, mobility, food, work and rest, other consumption and spending, quality of life, difficulties and relationships. Most questions were fixed-choice, but all sections, apart from background, had a general open question at the end so that the respondents could freely tell more of their thoughts, feelings and experiences of the topic.

Most fixed-choice questions had 2 (yes, no) or 4 (never, rarely, sometimes, often) options, but for life satisfaction the scale was from 1 to 10, to make it more

comparable to Helliwell et al. (2021). The question was similar but not exactly the same, and the context and sample of this study compared to that one were quite different.

To make the survey shorter and to avoid it being overly negative, I ended up cutting out some questions that I now regret. These included for example some basic details about housing, whether people had received negative comments about their low-carbon practices and if they felt lonely. Had I known that I would get some many responses, I would have also made other changes to the survey, to get more information and to make the results easier to analyse.

I analysed the survey by first looking through the survey results in general, and then looking at specific questions and answers, and also tried some cross-tabulation with the fixed-choice questions. Some answers were analysed only for respondents with footprints of 3.2 tons or less, to get an image of their alternative lifestyles.

There were 86 to 175 answers per question to the eight open questions at the end of sections, most of them several sentences long. I put them on digital post-it notes, first grouped by their question and organised by carbon footprint of respondent. I started the

analysis with the question about the social effects of low-carbon lifestyles. I recoloured negative and positive effects, and other interesting points with their own colours, and then further divided these answers into thematic groups. As the answers were long, many of them fit into several groups and were copied.

I then analysed the answers to the question about the difficulty of low-carbon lifestyles. Some of the answers were related to social effects, so I copied them there. Some were related to infrastructure, so I created a new group for infrastructural barriers.

The answers to the six other open questions at the end of sections were gone through in a similar way, with new groups created, but the focus remaining on social and well-being effects.

3.3 Interviews

Remote theme interviews were used to get a richer and more detailed understanding of different lifestyles, talk about social experiences and gender, and to discuss the future.

The interviewees were found through the survey, and chosen from those who were interested in being interviewed, based on their carbon footprint and

other answers. 98 people were interested in being interviewed, but as interviews can take a lot of time and mental energy, and I had already received a much larger amount of long open answers to the survey than I expected, the survey filled some of the intended function of the interviews, and I ended up doing only 6 interviews.

I chose five people with carbon footprints of 3 tons or less, aiming for variation in gender, income, and age, to be able to show that different kinds of people in different life situations live low-carbon, and to hear about different social contexts. Having individuals from different demographics also enabled using them similarly to personas.

Each individual had something about them that interested me: one was a full time activist, one a wealthy cisgender straight man with children, one a gay man, one a teenager, and one in her late 60s. In addition to them I also interviewed one non-binary person with a medical reason to use a car, who had a slightly higher carbon footprint (4.2 tons). Not including the last one, the average carbon footprint of the interviewees was 2.5 tons, the 2030 goal.

The interviews had three themes: life situation and lifestyle (living situation, mobility, diet, other consumption,

how they spend their time), social effects (social contexts, influence of and on others, positive and negative experiences), and future (how their well-being could be increased but emissions even further reduced in 2030).

The interviews began with a brief description of the study and the purpose of the interview, and receiving consent for recording and using the data anonymously. After this the first theme was life situation and lifestyle practices, as they are more superficial and easier to answer, with social effects being discussed as people started to open up, and ending with talking about futures when the topic of low-carbon lifestyle had already been discussed for a while. However, this structure was not followed strictly, and the themes alternated and were brought up earlier and answers were returned to later.

I was originally planning to have the discussion about futures as a separate workshop or focus group with several forerunner participants, but decided on doing it as part of the interviews instead as talking about one's future is quite personal, and the warm up of doing the other parts of the interview first could make opening up easier.

Each interview was different, but the main themes were discussed in each

in some way. I asked some specific questions based on their survey answers, and based on initial findings from the survey in general.

I talked to the interviewees via video, and could see them and a bit of their home, and asked them to send me some pictures of their homes and lives.

After the interviews I listened them through and wrote down basic info and a general description of interview respondent's current life, and transcribed and translated some parts. I gave the interviewees aliases, and changed some details to maintain anonymity.

3.4 Visioning

I used the three horizons framework (Sharpe et al., 2016) to create a vision for the future and to address the larger societal level of lifestyle emissions reductions and their social and well-being effects, to answer my third research question of How can emissions be reduced and well-being increased in Finland to enable low-carbon good lives?

The three horizons is a tool that can be used to design facilitating societal change. It helps working with complexity, helps see future potential in the present, and makes explicit the

processes of power and patterns of renewal. (Sharpe et al., 2016.) It is usually used with diverse stakeholders to also enable dialogue, but here I used it as a design tool from and with the forerunner point of view and to see a bigger picture.

The first horizon, H1, represents the business as usual, how things are done now. The second horizon, H2, represents innovation and other transitional activities that challenge and disrupt the current system. The third horizon, H3, is the emerging desirable future. (Sharpe et al., 2016.)

There are five key steps in working with the horizons:

1. examining present concerns
 2. exploring future aspirations
 3. exploring inspirational practice in the present
 4. innovation in play, and how these could work to change or maintain the current system
 5. essential features to maintain
- (Sharpe et al., 2016.)

My visioning with the three horizons was based on the survey and interviews, and I aimed to understand how the individual experiences related to larger societal systems. The interviews were then also used to show the societal changes again on the individual level.

I worked on both levels simultaneously, both being part of the same vision and being based on each other, just showing it in a different way.

I used four of the interviewees, whose present lives I described as examples, similarly to personas in the visioning part. Their futures were fictional, partly based on the dreams and plans for the future of the real individuals, but also my own imagination.

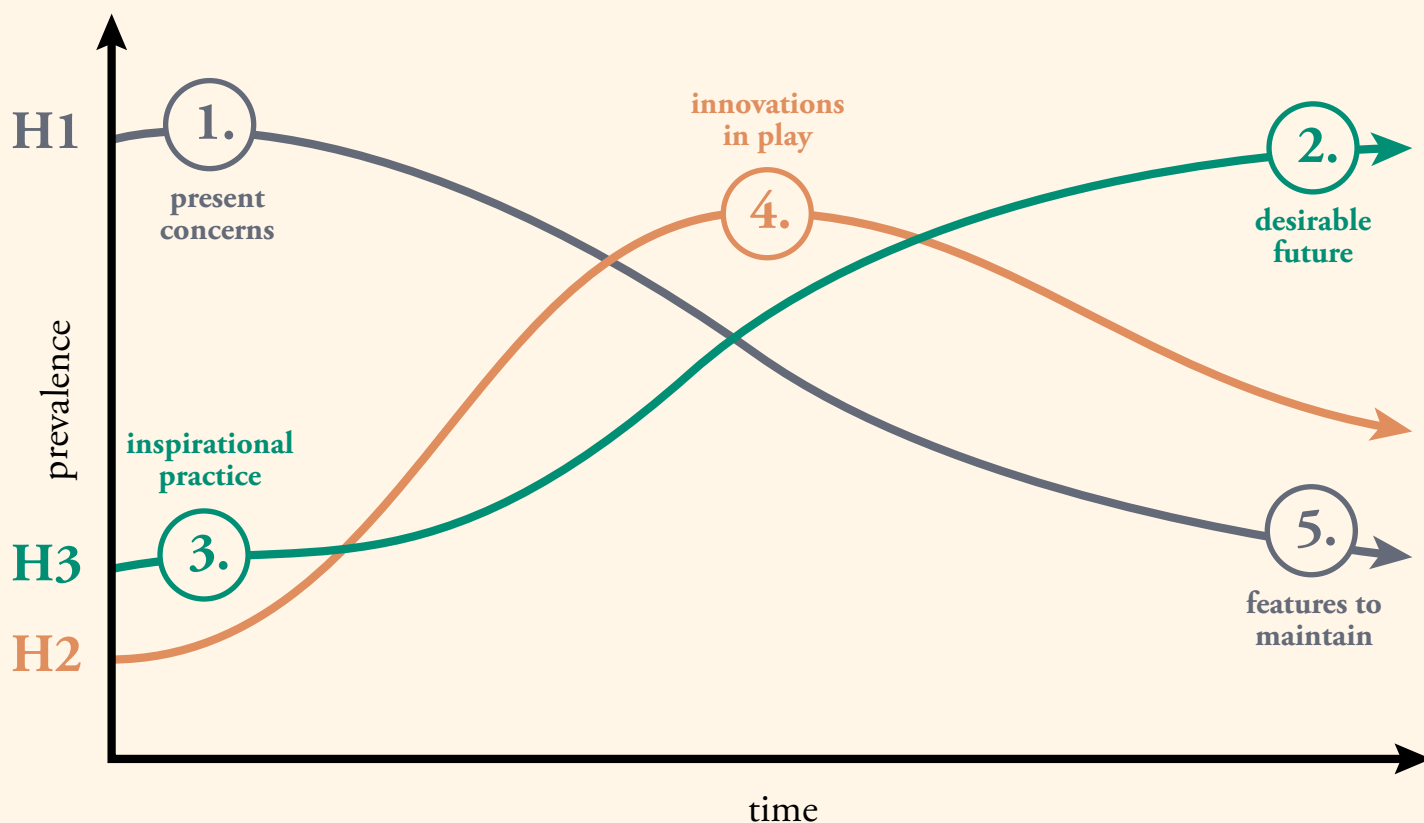


Figure 10 *The Three Horizons tool, adapted from Sharpe et al. (2016).*



4 Results

4.I Current Low-Carbon Lifestyles

4.I.I General Description of Current 2.5 ton Lifestyles

I looked especially at those subjects whose lifestyle carbon footprints were 3.2 tons or less, as their average footprint was 2.5 tons, the 2030 goal. This was 221 survey respondents, so just over half, and five interviewees, who are also included in the survey respondents.

Like when looking at all survey respondents, most of the people in this

group were women. 177 were binary women, 24 were binary men and 20 were non-binary people. The amount of non-binary people and other LGBTQ+ people was larger than when looking at all survey respondents, as they had smaller carbon footprints on average when looking at the whole group.

Most were quite low-income with 37% having a yearly income of below 10

000 euros, and 62% incomes below 20 000 euros. There were however some respondents (10 people, so about 5%) who had yearly incomes above 50 000 euros, with the rest falling somewhere in between. This is consistent with earlier research on income correlating with carbon footprint.

46% of them lived in the Helsinki metropolitan area, mostly also in the municipality of Helsinki. 70% lived in one of the six largest cities in Finland (Helsinki, Espoo, Tampere, Vantaa, Oulu, Turku). But there were also some living in smaller towns and farther up North. 50% had non-renewable district heating they knew of, and another 15% did not know their heating method, meaning that they most likely also had district heating. This is surprising as heating creates a large amount of the emissions of Finns. Only 9% had solar panels or heat pumps. In the open answers many describe being unable to change their heating method, temperature and/or electricity source. But there is also variation in living situations, with some living in small apartments in city centers, and others in old log houses in the countryside.

74% didn't use any type of a private car for daily transportation, and 51% didn't use one for daily transportation nor longer travelling. 26% used an electric,

hybrid or other alternative fuel car for transportation and/or travelling.

41% had a vegan diet, and only 5% an omnivorous one, but most (53%) had a non-vegan diet of reduced animal products. There was much variation within this group, and the line between them and those with a vegan diet is not very clear. Some of them had cut out some specific categories of animal products such as meat or dairy, while others had decreased their amount and only ate them infrequently, while some were vegans who made exceptions. 77% picked wild food (such as berries, mushrooms and/or wild herbs), 54% bought or received waste food, 48% grew food, 12% dumpster dived food, and 7% hunted and/or fished.

The most common practices were related to the consumption of goods. Over 90% had made, borrowed or lended, and bought ethically made things, and almost 90% had repaired, bought second hand, and avoided buying things.

4.1.2

Examples of Forerunner Lives

These descriptions are each based on one interviewed forerunner. Their names, faces, and some details have been changed, but their low-carbon lifestyles are real.



Figure 11 *Illustration of Aura, making a sign for a protest, wearing visibly repaired clothes.*

Aura 2 tons

Aura is in her mid 20s and a full time activist. She lives with a rescue cat in a studio apartment with fossil based district heating and renewable electricity. She eats mostly waste food, buying her weekly groceries from a waste food shop, and ordering sushi from a waste food app. She also grows oyster mushrooms at home in coffee grounds. She has been vegan for many years, and is good at cooking. Activism and volunteer work are very important to her especially

as a social activity. She feels like she is being very useful to society, but that this is not appreciated as she is seen as unemployed and lives in poverty, her income not being enough to fill all her basic needs. She feels like she isn't taken seriously because she is a young woman. She sometimes makes exceptions to her low-carbon ways in social situations with mobility, but in her activist circles vegan food is a norm and she doesn't even have to request it.

Leo

2.2 tons

Leo is in his late teens, and an upper secondary school student whose main interest, hobby and plans for a future profession are music. His income is small, but he doesn't feel like he needs much else than music in his life, just his basic needs met. He lives with a roommate in an apartment near his school. He usually walks to places, taking the train for longer trips. He is a recent vegan, having started with

the support of the vegan challenge. He makes exceptions to his veganism when with his family, but his brother is vegetarian, and his whole family has reduced their meat consumption. At his current school the social environment is very sustainability minded and feminist, and he feels like it has enabled him to change and break the mainstream norms of masculinity.

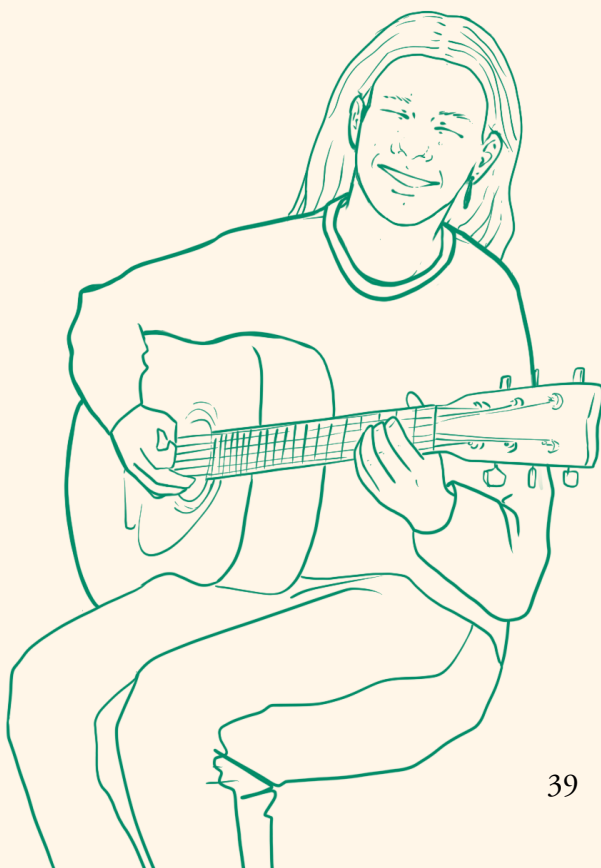


Figure 12 *Illustration of Leo with long hair and an earring, playing guitar.*

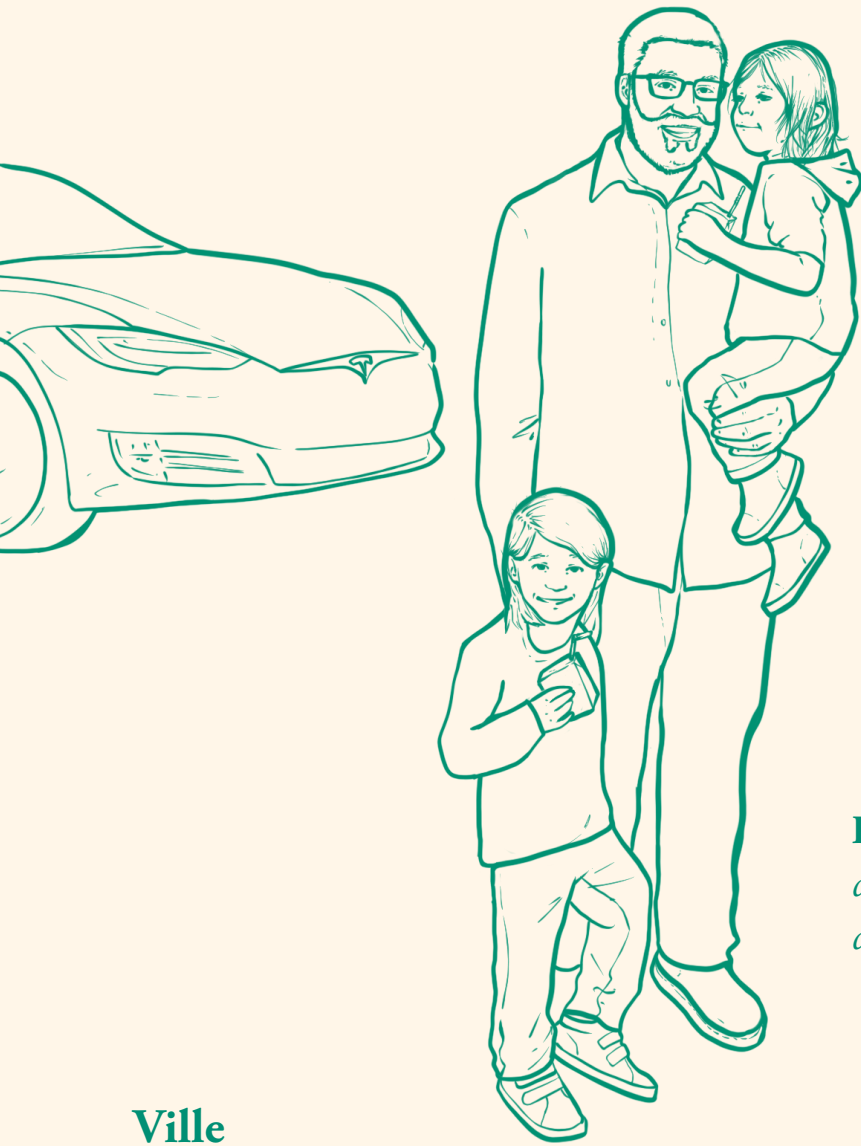


Figure 13 *Illustration of Ville, wearing casual clothing and a beard, with his children, and his Tesla in the background.*

Ville 2.6 tons

Ville is in his mid 30s, and works in mid management in a technology company. He lives in a medium sized apartment with green electricity and district heating, and has two kids. He and his family is vegan, eating common Finnish meals, but as their plant based versions, and with more vegetables, and the kids get vegan food at daycare. He drives a Tesla, which is sometimes viewed a bit negatively by others, and has an e-cargo bike that there is no infrastructure for. He's involved with a project of getting

solar panels to his apartment building, and has asked for vegan food and EV charging points at work. Electric vehicles and solar panels are a hobby for him, that has replaced his previous motorcycle hobby. He also enjoys outdoor exercise and spending time with his kids. His workplace is very masculine, and he has received negative feedback for his veganism, but technological solutions of green energy and electric vehicles are more accepted and even desired.

Tuulia

3 tons

Tuulia is in her late 60s, and lives alone in an old detached house, to which she has installed solar panels and geothermal heating some years ago. She had an office job for decades, but quit it a decade before retiring, starting to sew and repair textiles instead, which she still continues as a hobby. She also grows vegetables in her yard, and her diet is plant heavy, but also includes some animal products. She tries to walk as much as possible, but also sometimes carpools with

relatives living close by. Her expenses are very small, and despite having a small income, she finds it difficult to find ways to spend it. She is friends with an immigrant family, helping their son in his Swedish studies as his parents don't speak Swedish, and he helps her with modern technology. She has lost one friend due to disagreeing on climate action, and because of this mostly avoids talking about the topic.



Figure 14 *Illustration of Tuulia watering tomatoes in front of her house that has solar panels on the roof.*

4.3 Well-Being Effects of Low-Carbon Lifestyles

4.3.1

Life Satisfaction and Quality of Life

The life satisfaction of all survey respondents was 7.9 out of 10, so the same as the Finnish average (Helliwell et al., 2021). When looking at respondents with carbon footprints of below 10 tons, it dropped to 7.8. There were only six respondents with footprints above 10 tons, but their high answers caused a very small difference in the life satisfaction between those with the highest emissions, and everyone else.

The respondents with carbon footprints of 3.2 tons or below had the same average as all below 10 tons. There was no significant decrease in life satisfaction related to low carbon footprints.

If Finnish average life satisfaction was that of those with low footprints, Finland would still be the happiest country in the world, above the second happiest country in the world, Iceland

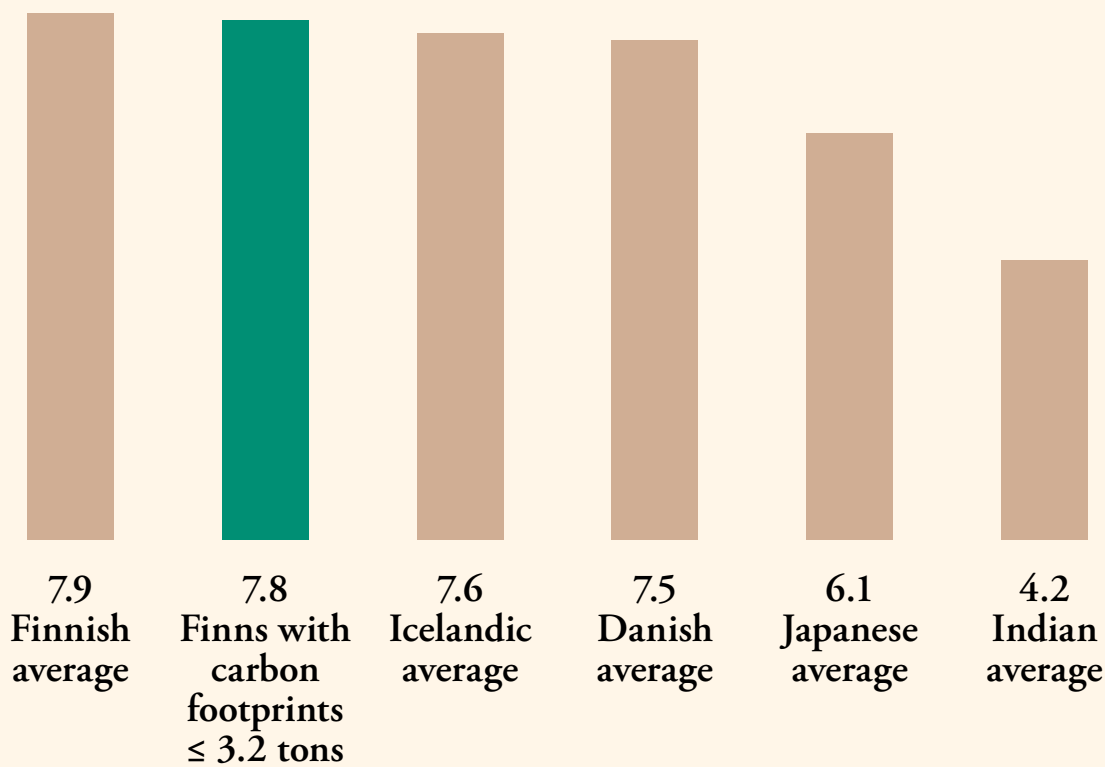


Figure 15 *Life satisfaction on average in different countries (Helliwell et al, 2021) and of survey respondents with carbon footprints of 3.2 tons or below.*

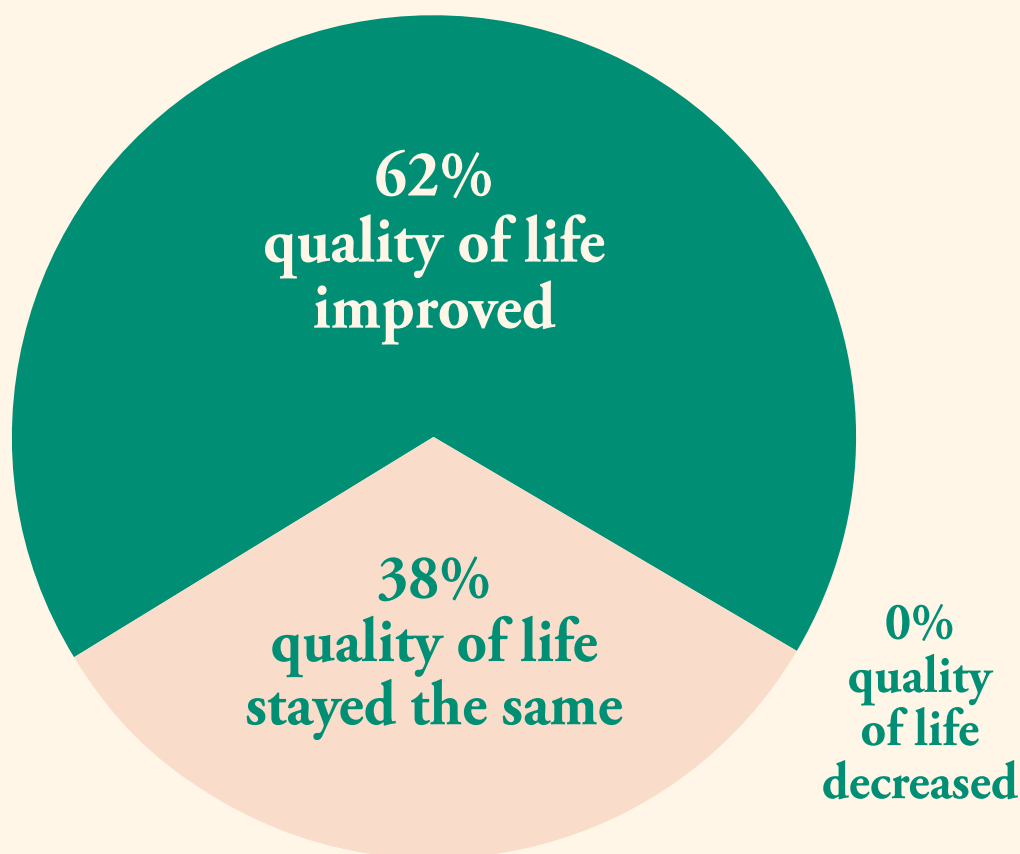
at 7.6, and third happiest Denmark at 7.5, and for example almost twice that of India's 4.2 (Helliwell et al, 2021). Even Finns with very low carbon footprints are more content than people in the rest of the world.

This small drop in life satisfaction was not experienced at all on the level of individuals, who felt like their life had improved or stayed the same due to reduced emissions. Those with low carbon footprints may have had a much

lower life satisfaction to begin with, and this can be related to lower incomes and larger amount of LGBTQ+ people, as in our current system well-being is not equally distributed.

Of all respondents, 62% say their quality of life has improved through lowering their carbon footprint, while 38% say it has stayed the same. Only 2 respondents (less than 1%) say their quality of life has decreased. Of those who had carbon footprints of 3.2 tons or less, 67% say

Figure 16 *Effect of low-carbon lifestyle on the quality of life of survey respondents with carbon footprints of 3.2 tons or below*



their quality of life has improved, 33% that it has stayed the same, and no one that it had decreased.

While people felt that their quality of life had improved, the negative social effects related to living an alternative lifestyle may have a negative effect on well-being and life satisfaction.

4.3.2

Well-Being Benefits

65% of survey respondents with carbon footprints of 3.2 tons or below listed psychological or emotional well-being as something they have gained through lowering their carbon footprint. It was also the most commonly mentioned theme in the open answers. Respondents describe feeling calm and peaceful, and emotionally good for doing good or not doing harm, and feeling happier related to reduced pressure to consume. They also mention reduced climate anxiety, and life feeling more meaningful.

“I feel calmer and that I’m living according to my values.”

“Low-carbon lifestyle practices bring more meaning to life, and acting according to my values improves my mood.”

“It has brought peace and meaning to my life. You don’t need to chase sales or think

about the next trip somewhere South, and you don’t miss that at all.”

“I’m happy I no longer feel a compulsive need to consume and constantly buy more. I’m content with less.”

“My mind has calmed as I’ve learned to differentiate wanting from needing and as I have aimed to minimise consumption.”

Another common theme in the open answers to the question about well-being effects was people having always lived the way they do, or having changed their lifestyle so little or so slowly that they haven’t noticed a change.

“My life has essentially always been ‘low-carbon’ or aiming towards that, so no special big change like that has happened, at least not in the recent years, I’ve just become more ecological little by little.”

“I feel like I’ve had the same lifestyle since childhood, even though I never thought of it as low-carbon. Old objects and second hand shops, sewing and repairing, gardening etc. have always been a part of my life and I don’t feel like I’ve given anything up.”

Of the survey respondents with footprints of 3.2 tons or below, 78% say they have gained more vegetables to

their diet. In the open answers lowered consumption of animal products and higher consumption of vegetables is mentioned both as a source for physical and mental well-being.

“Being more vegan has increased my physical well-being”

“Good mood from good food and feeling clearly more energetic from eating a lot of vegetables”

56% of survey respondents with footprints of 3.2 or below say they have gained more exercise with their low-carbon lifestyle. In the open answers they mention low-carbon ways to move around as being beneficial to their health, but more commonly describe them being enjoyable activities. Low-carbon ways to move around can be sources of enjoyment and enable experiencing one's environment in pleasant ways.

“Walking is the best, keeps you healthy and it's lovely to be outside on purpose”

“Walking is the best and quite therapeutic. Travelling by land you see and experience more than on a plane.”

“Quitting flying has brought wonderful long train trips to my life! A car free

lifestyle is carefree, we summer house a walking distance away in a community garden plot. Walking and cycling is good everyday exercise.”

“Visiting and spending time in nature (which in itself isn't necessarily low-carbon for everyone at all) is important and pleasant to me, and meeting non-human animals on cycling trips has been a great joy.”

51% have found new pleasant things to do, 66% have learned new skills, and 33% have gained new friends or an increased sense of belonging by reducing their footprints. In the open answers low-carbon activities such as repairing are described as enjoyable in themselves. Well-being coming from other things than consumption such as relationships was also mentioned.

“It feels good to borrow books from the library and to repair objects, visit a museum and look for edible plants, go berry and mushroom picking.”

“I learned to repair socks, it was awesome!”

“My quality of life comes from close relationships, hobbies, art and other non-material sources.”

4.3.3

Income, Work And Rest

Most respondents with carbon footprints of or below 3.2 tons had yearly incomes below 20 000 euros. When looking at respondents of all income levels with footprints of or below 3.2 tons, 13% felt like their income was enough for plentiful consumption, 66% for sufficient consumption, 20% for only the necessary consumption, and 2% did not have enough money to fill their basic needs.

But when asking about how they felt about their lives, the percentage of people who felt plentifulness rose significantly. 26% responded their life felt plentiful, 67% that it felt sufficient, 4% felt scarcity and 3% deprived.

In some open answers respondents refer to their experiences of not having enough money.

“Being chronically low-income has a significant negative effect on my well-being. On the other hand, living according to my values, relationships and reaching towards sustainability related goals with other people has a positive effect.”

“The experiences of lacking something have so far not been due to a more

ecological lifestyle, but due to lacking money.”

53% say their low-carbon lifestyle has reduced their expenses, 42% that their expenses have stayed the same, and 6% that they have increased.

Of those respondents who worked or studied (full or part-time), 28% often felt exhausted by their work or studies, with 52% feeling so sometimes, 17% rarely, and only 3% never. The numbers stay at similar heights when looking at those with footprints of 3.2 tons or below, and those who get to often advance sustainability in their work or studies.

But not being able to advance sustainability at work and work feeling meaningless was mentioned as a possible cause for burnout, and many wished to find work more in line with their values.

Some respondents had started working only part-time due to burnout or to avoid it. Some were on sick leave or had retired for health reasons. One respondent mentioned that after burning out, and retirement caused by it, their quality of life had increased significantly.

Of survey respondents with carbon footprints of 3.2 tons or below, 24% had worked less or saved money to be able to work less when having money left after their basic expenses. On another question 21% responded they have gained more free time due to living low-carbon. An interviewee described quitting her office job to become a tailor, repairing clothing for the last decade before retiring, and then continuing to do repairs as a hobby, asking people to pay for her service with donations to charities, as she felt like she didn't need money herself.

Of respondents with carbon footprints of 3.2 tons or below, 15% were active in an NGO or did volunteer work often, 25% sometimes, 25% rarely, and 35% never. Volunteer work was slightly less common for those with higher footprints. Interest in becoming active in some organisation was mentioned by an interviewee, and in the open answers. Some describe wanting to do volunteer work, but not having energy for it due to work or studies. One interviewee who did activism full time felt she was being beneficial to society, but was not compensated for it.

Of all respondents, 53% felt like they get enough sleep often, 35% sometimes, 11% rarely, and 1% never. Those who got enough sleep more frequently had

lower average footprints. It was 3.6 tons for those who got enough sleep often, 3.8 tons for those who answered sometimes, and 4.6 tons for those who only rarely got enough sleep.

Burnout, stress and feeling tired were also described as reasons that can make it more difficult to make low-carbon choices, as they can require more active thinking, time and effort than their carbon intensive alternatives. Climate anxiety itself was also mentioned as cause for burnout.

“With burnout I have less energy to make ecological choices which causes anxiety and further burnout”

“It feels like to me that ecological lifestyle also requires a fresh mind. When exhausted I don't necessarily have the energy to think about what I could make from ingredients forgotten in the fridge, so they go bad and end up as biowaste. Similarly repairing clothes requires mentally more than the work itself, so one is more likely to buy a new piece of clothing to replace the old (especially if the broken one was not worth much to begin with).”

More rest and sleep could be not just means to be more efficient workers, but ways to increase well-being while reducing emissions.

4.4 Social Effects of Low-Carbon Lifestyles

I found negative and positive social effects related to low-carbon lifestyle practices, that can make adopting low-carbon practices more difficult or easier, and affect well-being as well.

With the social effects, unless otherwise mentioned, the numerical data presented is of those with carbon footprints of 3.2 tons or below, to show how common these effects are for this group, but the open answers are from all survey respondents, as the same effects were mentioned by those with higher footprints as well as they too had some alternative low-carbon practices. The fixed and open answers from both groups were very similar, with those with lower footprints having only slightly stronger effects.

4.4.1

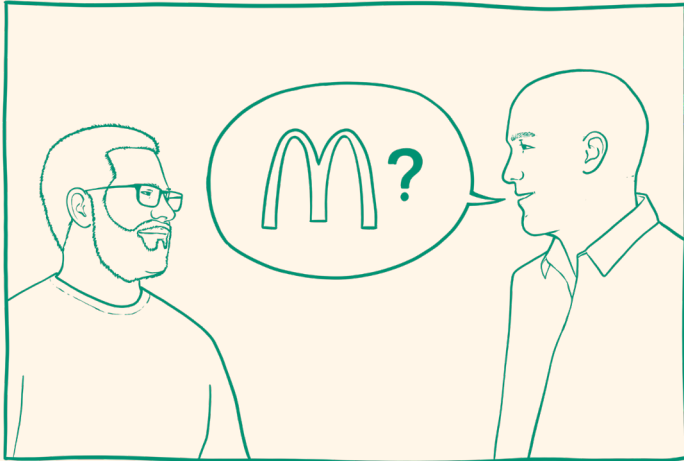
Gender and Queerness

Most of the respondents were women, and the amount of LGBTQ+ respondents was also quite high. This can be due to the reach of the survey, but also related to women and LGBTQ+ people being more willing to participate in this research, and more willing and able to live low-carbon, as green behaviours are seen as feminine.

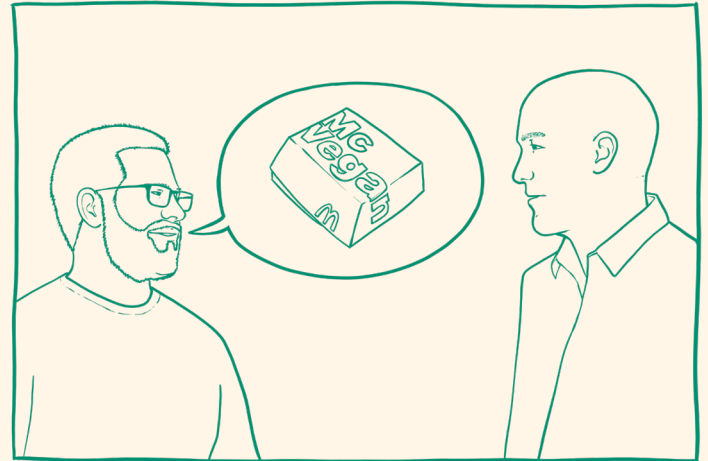
In the interviews low-carbon practices were said to be easier to women than to men for social reasons, and one interviewee even said that he felt that some people even see all environmental concerns as unmasculine. He also said that for example being vegetarian as a man requires one to have a strong self esteem, as it breaks the norms of

masculinity. He described an example of a specific situation where choosing a vegan food option caused him to be made fun of in a way that was aimed to directly attack his masculinity by implying that he was feminine for doing so.

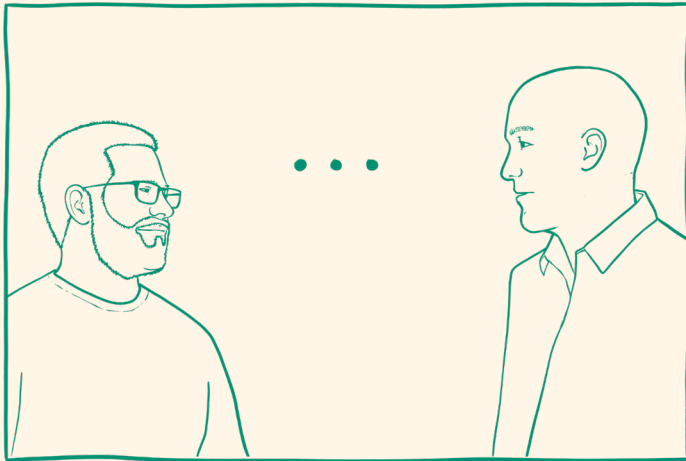
When looking at the carbon footprints of respondents by gender, men had the largest average footprint at 4.5 tons, while women had much lower average footprint at 3.5 tons, and non-binary people even lower at 3.1 tons. If looking at all Finns, this difference could be even larger, as this data only includes those men who were interested in the study and most had very low carbon footprints.



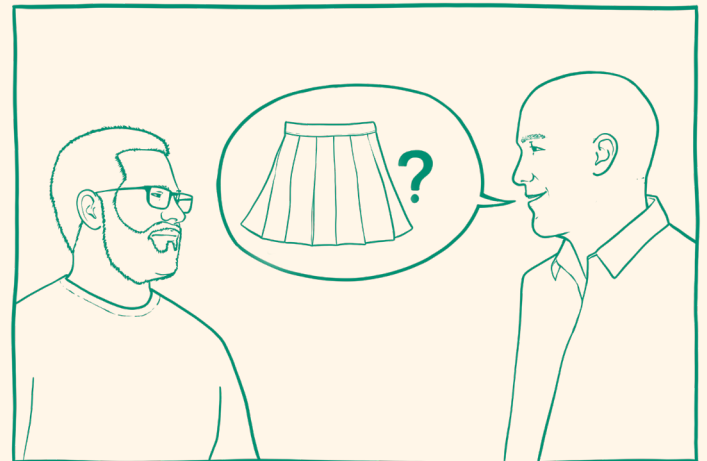
"I was at my previous workplace and we were like working, and one guy said that he's going to get us food from McDonald's and asked what everyone wanted and wrote them down,



and I wanted a McVegan or something,



and the guy looks at me for a long time



and asks if he should bring me a skirt with it."

Figure 17 *A situation described by an interviewee illustrating a gender related negative social effect of asking for a vegan food option.*

However, when looking at straight cis men and LGBTQ+ men seperately, queer men had an average footprint of just 3.2 tons while for cisgender straight men the figure was 4.8. There was a similar but smaller difference for women as well, with the average footprint being 3.6 for straigh cis women and 3.2 for LGBTQ+ women.

The gender difference disappears when looking at LGBTQ+ people. This could be because queerness breaks gender norms, additional norm-breaking might not cause additional social sanctions, or they might not be enough to affect behaviour for someone with an identity of being different. If a man was already

dressed in a gender non-conforming way, the skirt joke could lose its power.

An interviewee described becoming vegetarian, prior to coming out as gay, as one more way he was breaking the norms of masculinity, which he felt he should be conforming to. After coming out, he was already breaking the norms by just openly existing as himself, and wasn't that concerned with them anymore.

In addition to LGBTQ+ people, breaking norms being easier might also apply to other minorities or people who are different in some way. It can also be more related to other alternative

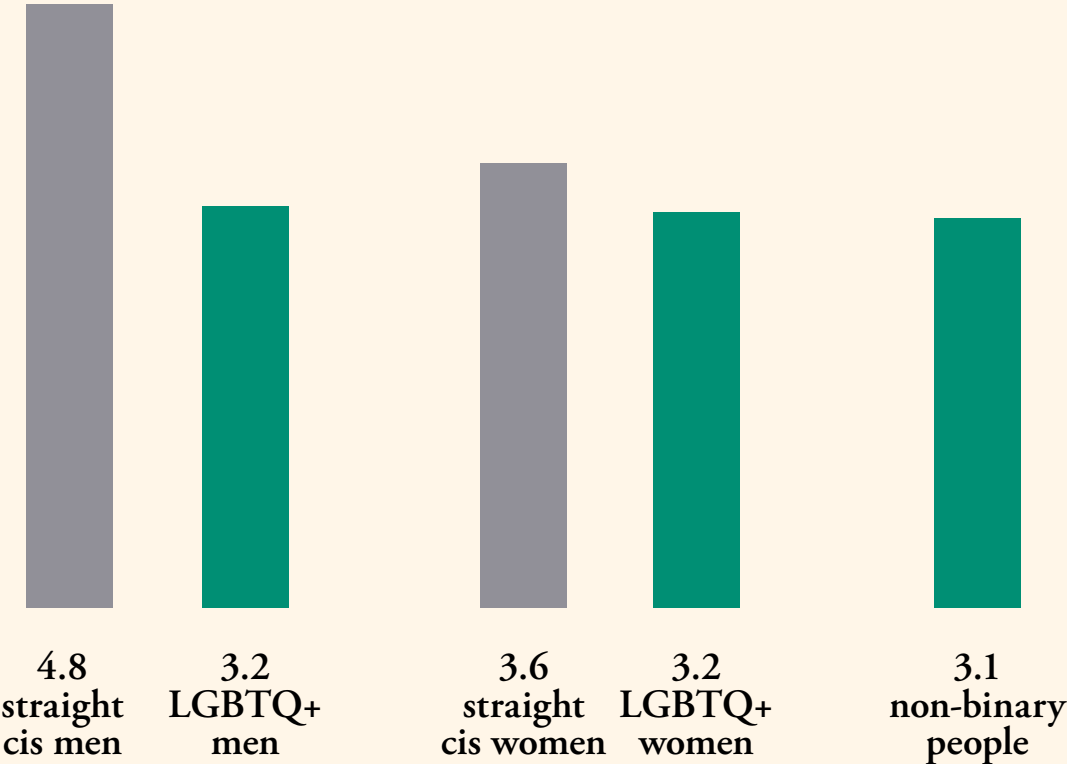


Figure 18 *Average carbon footprints of survey respondents by gender and sexuality, in tons of CO₂e*

identities for queer people as well. For example one non-binary respondent described not being concerned with social costs of living according to their values due to being neurodivergent.

Adopting low-carbon practices might not always be easier for queer or other norm-breaking people, as some who break gender norms might avoid further breaking them, or try to compensate for them, in fear of social sanctions or hoping to avoid them. This can also be related to internalised homophobia or transphobia, but also safety concerns and the social environment.

A straight cis man described their new school being a more feminist environment where he was able to easily become and be vegan, while in his previous school the norms for masculinity were much more strict. And a gay man described having moved to a larger city and a specific neighbourhood for its social environment.

Queer people, and other people breaking gender norms, might prefer social environments that are friendlier towards them, and have less strict gender norms, or even celebrate breaking them. These environments can allow and support gender non-conforming low-carbon practices and amplify their positive social effects.

In the interviews also the women and non-binary person said they felt low-carbon practices are more difficult for men for social reasons, and one woman described sexism affecting her views and practices related to sustainability not being taken seriously.

While women and gender minorities could be looked up to for their lower emissions, they often have less power and social status than carbon-intensive men. Giving women, gender minorities and queer men more power could enable both increased well-being for these groups, but also a faster transition to a low-carbon society.

4.4.2

Negative Social Effects

Several negative social effects in addition to the social sanctions related to breaking gender roles were mentioned in the open survey answers and in the interviews.

Of survey respondents with carbon footprints of 3.2 tons or below, 63% felt that others not sharing their low-carbon practices made low-carbon life more difficult.

Only 4% felt like an outsider for their low-carbon lifestyle often, but 27% sometimes, 37% rarely, and 33% never.

And only 3% said their low-carbon practices limited participating in social activities often, but 31% sometimes, 34% rarely, and 32% never.

While these negative effects were not commonly experienced often, they can be significant to individuals and their well-being, and were described in several open answers. In addition to feeling like an outsider and being left out, they also describe having distanced themselves from others, and relationships being strained or lost.

“All shared vacation trips are off the table as other people don’t understand our way of travelling.”

“I have almost lost touch with some of my relatives who haven’t understood my vegetarianism or citizen activism in environmental organisations etc. Our values have been so different. Now when things and climate change are talked about more in the media, they are starting to understand more.”

Respondents describe receiving negative feedback for their low-carbon practices, feeling unaccepted, their practices being questioned and having to explain them, and others becoming defensive.

“When eating together I’m usually the person whose diet’s variation/tastiness/

sustainability/ethics is questioned, or the one people expect to forgive them for their sins. I should for example be concerned with plant rights.”

“I have felt that talking about sustainability and low-carbon lifestyle makes people reserved and defensive in some situations. People start explaining their car-use and choices, even though they have not been questioned. I often try to ‘choose well’ the people I ‘reveal’ the motives behind my lifestyle, because I don’t want people around me to feel awkward. It makes me feel awkward as well.”

16% felt that it’s unacceptable or awkward to talk about their low-carbon practices often, 44% sometimes, 25% rarely, and 15% never. While it was not commonly experienced often, it was experienced at least sometimes by the majority of respondents, and in the open answers avoiding mentioning their low-carbon practices to avoid negative social effects was commonly mentioned.

“I don’t want people to think of me as a preacher, and I sometimes avoid, for example, bringing up my vegan diet. It often feels difficult to go to eat at someone’s place, because I don’t want to be a bother.”

“I don’t want to talk about my low

carbon lifestyle, because in my experience it makes people feel guilt.”

“Before I used to try to have a constructive conversation, but now I ask for food peace and tell that it’s not pleasant for me to have to explain my choices every time we eat together.”

Social flexibility of low-carbon practices (making exceptions and avoiding low-carbon activities in social situations), was mentioned in many answers to several different questions.

There were also social barriers, where people were unable to choose low-carbon options due to social reasons.

When asked about their diet, many described themselves as home vegans, meaning they eat vegan at home, but include animal products when visiting others or in restaurants. With housing, some describe being unable to change their heating method, temperature or electricity plan due to social reasons. With mobility, some describe using vehicles when with others.

Flexibility can be a good thing as it can make low-carbon lifestyles easier to approach and to maintain compared to being very strict. And to have a low footprint, one does not need to be strict, as with diet for example most of those

with low footprints were not vegan, but had various different kinds of diets of reduced animal product consumption.

Flexibility can be a way to maintain group identity. In the best case this can mean everyone makes a compromise and meets halfway through in a way that reduces the group’s total emissions, or possible even everyone adopting the low-carbon practices.

“When I move out I want to eat vegan. At the moment my dad cooks for the whole family, and I’m happy my mom and sibling have become vegetarians with me. Now we only eat vegetarian food and only dad occasionally nibbles on some ribs.”

But the flexibility for social reasons and social barriers to low-carbon practices are signs that low-carbon practices are discouraged in social situations, and while this doesn’t cause big changes to the footprint of the person being flexible, it can prevent low-carbon practices being adopted in the first place, and their social spreading.

4.4.3 Positive Social Effects

In addition to the negative, I also found positive social effects, related to social spreading of low-carbon practices, and

social connection and relationships.

Sharing similar values or practices with others can be very important, empowering and encouraging. 33% of survey respondents with carbon footprints of 3.2 tons or below say have gained new friends or an increased sense of belonging by reducing their footprints.

In the open answers, the most commonly mentioned positive social aspect was other individuals or whole social circles that shared their values or low-carbon practices, often in contrast with most other people not sharing them.

“I dumpster dive with my friend group and share sustainable living tips with them. I have a “bubble” where this lifestyle is understood, and I have accepted that outside it talking about it is taboo and makes other people feel guilt.”

“My most important relationship, my spouse, shares the same values and lifestyle, so low-carbon life together is easy and a given. My friends whose spouses don’t think the same about this stuff have to make a lot more compromises.”

“Luckily both my family and friends are interested in climate actions so I don’t really feel like an outsider. Mostly as I

look at the rest of the world I feel alone facing this task.”

One activist described volunteer work and activism as essential social activities. The social aspects were both making activism more attractive, but also a positive aspect of an activity that felt necessary in itself.

Social media was also mentioned in many open answers as a place where they could find others who share their values and practices, and as a way to influence others.

“I don’t feel like an outsider because social media confirms to me that many have changed their lifestyle to be lower in emissions.”

“When other people don’t behave in more low-carbon ways it makes me feel anxiety (sometimes very much so). I am deeply worried about the environment and sometimes I feel like other people don’t care (except for example in vegan and minimalist groups in Facebook)”

“I know I have inspired others to live more sustainably face to face, but especially through social media. I try to talk about sustainable alternatives and how they slowly become habits. And about how I feel like I’m living a better life now. Through social media I have

also met lovely new acquaintances who share the same values.”

88% had been inspired or encouraged by seeing or hearing about someone else’s low-carbon practices to adopt them themselves. In the open answers this is mentioned especially with veganism, having become vegan or reducing their consumption of animal products inspired by someone else.

“I’ve been inspired for example by people I’ve dated who have been vegan, and it has been nice to put effort into a vegan breakfast. In the process my own diet has changed a bit as well.”

“My family is quite conservative so for example recycled, vegan or charity gifts cause controversy, politicization and me being stigmatised. On the other hand

my vegan roommates and school friends studying social sciences have made me almost vegan as well.”

One parent described the whole family becoming vegan after the option of vegan food was offered to their children when starting day care. Another had just become vegan with the help of the Vegan challenge, which offers recipes and a community.

75% think they too have inspired others to lower their impact. In the open answers the difficulty of knowing one’s own influence was mentioned, but also specific instances where they know they have inspired someone. Several people specifically mention having influenced their parents reducing their meat consumption.

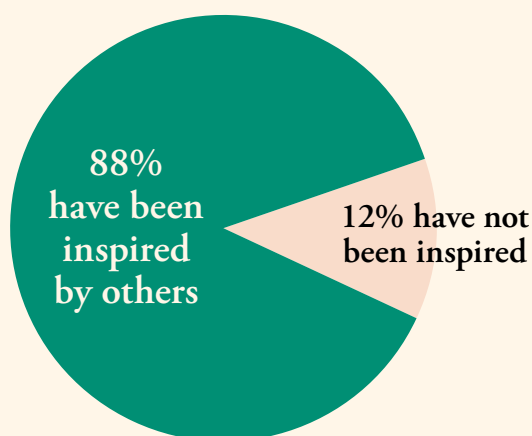


Figure 19 Amount of respondents who have been inspired by seeing or hearing about the low-carbon practices of others.

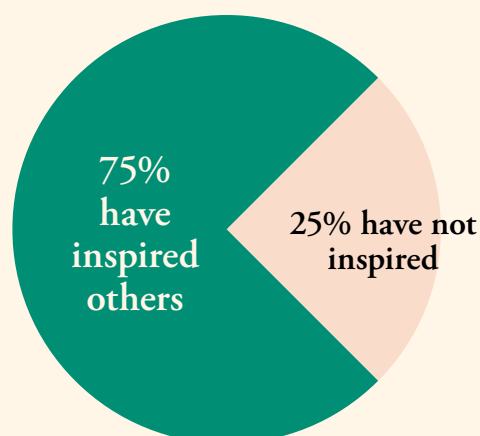


Figure 20 Amount of respondents who think they have inspired others with their own low-carbon practices.

4.5 Infrastructural Barriers to Living Low-Carbon

Both our social and physical structures support carbon intensive practices. They can also both be positive forces enabling low-carbon life. The main difference is that the social barriers and enablers are often left out of the conversation. But while this work focuses on the social, infrastructural barriers were still something most of those living low-carbon had run into, as a wall limiting how much they could reduce their emissions.

With infrastructural barriers I looked at all open answers to the survey, also from those with higher footprints, but the same barriers were mentioned by those with small footprints as well. Infrastructural barriers were also mentioned in the interviews, but they were not specifically focused on, apart from the one interviewee who had the highest footprint. I chose that person to interview as they had a medical reason for needing to drive, but unfortunate for the study they did not have that kind of disability that would have enabled learning more about the wider effects of disabilities on carbon footprints.

Of all survey respondents 58% answered that systems not supporting low-carbon life made low-carbon life more difficult. While infrastructure doesn't

make low-carbon life impossible, as for example many of those with the smallest footprints had non-renewable district heating, it does make it more difficult, and has very direct effects on emissions.

Infrastructural barriers were very common in housing, with many being unable to change their heating method.

With food, vegan options have become more plentiful and easily available. They are nowhere near the level of meat and dairy, but it has become much easier to find them. In addition to the availability of vegan food, waste food was also mentioned, and is related to grocery stores and waste management, and there are special waste food shops and apps.

With mobility, lack of public transport and its accessibility were mentioned as reasons to drive. An interviewee was able to use public transport only sometimes, as it was not always accessible to them related to medical reasons.

Those who cycle also mentioned a lack of cycling infrastructure, such as road design and services for long distance bicycling, and parking for cargo bikes. While it had not prevented them from cycling, it might prevent others from even considering it. For example one

interviewee owned a cargo bike, and was able to find a spot for it in their building, but as there is no other space for it, no one else in the building is able to get a cargo bike of their own.

While needing to drive was the only disability related barrier to low-carbon lifestyles found in this study, it is important to note that individuals have different needs and capabilities, and there are disability related reasons to have higher emissions. While making low-carbon options more accessible and sustainability improvements to assistive tools and services can reduce this, it is likely that there will still be differences in how much different people need to consume to reach a similar standard of living. This means that to reach a low average carbon footprint in a way that enables everyone to have a good life, those more capable need to have their emissions below the average.

These barriers are very real, have direct effects on emissions, and these structures pushing us to be carbon intensive need to be changed on a systemic level. But looking at just physical infrastructure reduces the problems and solutions to be quite technical. And it doesn't explain how some Finns are still able to live low-carbon despite being affected by these barriers, and others have large footprints

despite having low-carbon alternatives available to them.

That people who face some of these are able to compensate for it with other actions, shows that low-carbon life is possible on the level of individuals without changing some unsustainable systems, but also that without changing them, further reductions large enough are not possible.

As the forerunners with low-carbon footprints still have emissions related to unsustainable infrastructure, such as fossil based district heating, it means that by changing these systems, we can have them reach even lower emissions and remain forerunners.

5 Visioning

To answer the third research question, I vision from a forerunner point of view how lifestyle emissions could be reduced and well-being increased in Finland by 2030. The three horizons framework is used to see a bigger picture, and then individual personas based on the interviews illustrate these changes on the level of individuals.

5.1

Three Horizons for Low-Carbon Good Life

Based on the results of this study presented in the previous chapters, and the part of the interviews where discussing the future, I used the three horizons based on Sharpe et al. (2016) to see what changes could enable low-carbon good life in Finland by 2030. The first horizon (H1) is the current system, the third horizon (H3) is the emerging desirable future, and the second horizon (H2) is potentially disruptive innovations that could be key in changing the course, but could still go either way.

1. H1 Present concerns

In the current system, we produce enormous emissions, which are maintained with physical infrastructure, and by carbon intensive life being a social norm, while low-carbon life is socially discouraged. We have unsustainable and carbon intensive food, energy and mobility systems, and systems supporting high production and consumption of goods. These are also supported by our gender and financial systems, which also have negative effects on the well-being of individuals, especially women, minorities and those with low incomes. Some specific problems related to these systems are: social costs to those living low-carbon,

systemic discrimination of gender minorities and social sanctions for anyone breaking gender norms, unpaid work and other work done mostly by women being underappreciated, work being divided very unevenly, relative poverty of those who are not employed, and people being exhausted by work.

2. H3 Future aspirations

In a desirable low-carbon future people have good lives of high well-being and low emissions. Low-carbon practices are not only accessible to all, but have become or are becoming defaults and social norms. Paid labour is reduced and divided more evenly and fairly among

individuals, while unpaid work done in homes and communities is appreciated more and divided more evenly among individuals and genders. There is no strict gender binary, and femininity and androgyny are valued. Food, mobility and energy systems have transitioned to be much more plant-based, renewable, electric and less car-based. Sharing, repairing, spending time outside and outside work, and other pleasant activities are appreciated and common. Society and its actors aim to increase well-being even if it compromises financial growth, not the other way around.

3. H3 Inspirational practice

We currently have inspirational low-carbon practices (plant-heavy diets, travelling by land and living car-free, bicycling and walking, renewable energy production, low consumption and sharing) being done by some individuals. We have low-carbon products and services for food, mobility, housing, and sharing, repairing and reusing goods. We have people breaking social norms by living low-carbon, existing outside the gender binary, and spending time without being financially productive or consuming much, and doing pleasant and valuable things outside paid work. We have some social environments and groups where low-carbon practices are normal.

4. H2 Innovations in play

Inspiring innovations include universal basic income, reduced work time, gender minority rights (and intersectional feminism in general), low-carbon defaults, the doughnut model (being used by the government and municipalities), including lifestyle emissions (and taking into account their social and well-being effects) in municipal and national emission reduction plans, and the expanding role and offerings of libraries, and other sharing services and non-commercial spaces and activities, and limiting commercial activities and advertising.

H2+ How these can aid us to reach a desirable future

All of these things can increase well-being, be a part of a larger change in social norms, and can directly or indirectly reduce emissions. To reach low emissions and high well-being for all, they both need to be prioritised.

Reduced work time and universal basic income are important for increasing well-being, and they can also be a part of changing what kind of activities we see as valuable.

Gender minority rights can be a part of breaking our strict societal gender norms, and increase the well-being of people belonging to gender minorities.

Considering gender and other power structures and intersections is important for our society to be fair, and as people with less power seem to have lower footprints, changing who has power could be key in transitioning to a low-carbon society.

Low-carbon defaults could reduce the negative social impacts of low-carbon practices and make them much more common.

Using the doughnut model could enable changing the priorities of our society, and making increasing well-being while reducing emissions something we aim towards.

Including lifestyle emissions in our municipal and national emission reduction goals and plans would show that we are doing worse than we are claiming now, and make reducing our outsourced emissions something we can aim towards. Including social and well-being effects could enable us to see the social barriers and aim to reduce them, and including the well-being effects can be used both to make low-carbon life more desirable, and to increase well-being.

Sharing could be a transformational force in making low consumption acceptable and in changing our

economic system. Public libraries are not just a system for sharing books, or even objects, but space and resources. Renting services by private companies on the other hand could be a way for them to find sources of revenue that are not tied to the constant selling of new things.

Limiting business activities could mean making sure unsustainable business is not possible even if it is profitable. Limiting advertising in general, and especially of unsustainable products and overconsumption in general could reduce overconsumption and make spaces more pleasant to be in.

H2- How these might not work

All these changes could cause opposition, have unintended consequences, or be done in ways that are not impactful enough or that are used in ways that support the current systems and structures.

If work time reduction doesn't result in reduced incomes, it won't reduce emissions, and it can also free more time for carbon intensive activities. Universal basic income can be too low, or increase the income of some, if not taxed away, and increase their emissions.

Official recognition of a third gender can make it easier to discriminate against non-binary people. And not

seeing gender, race or other social structures related to power can make discrimination invisible.

Making something a default instead of an alternative might cause opposition, and require the defaults to not be radical enough.

Challenging the growth economy could cause so much opposition, that it could increase political polarization. It might make reducing emissions more undesirable to some, and make green growth seem like a reasonable middle ground. The doughnut model can be easier to accept as it is growth agnostic, but it might be possible to use it only performatively, leaving out all impactful changes.

Including lifestyle emissions in municipal and national emission goals and plans could be too focused on individuals, and shift the responsibility to citizens. Including social and well-being effects could be used as a way to oppose emission reductions that are seen as possibly causing any negative effects, even for those with very high well-being.

The library can become more commercial, and sharing can increase consumption. If focused on creating profit and not reducing resource use, sharing can even increase emissions.

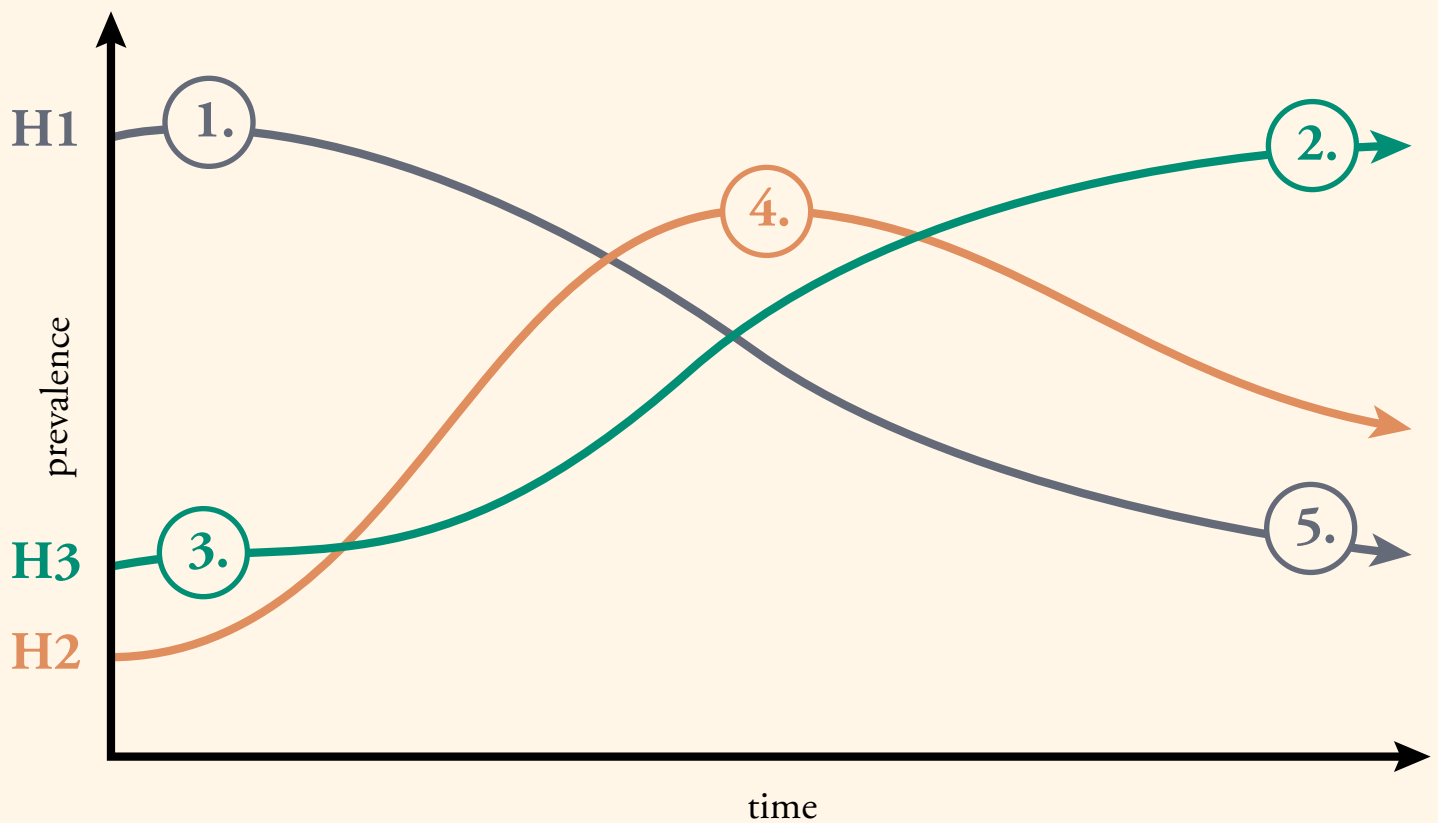
Shifting from buying to renting can give companies more control over our lives.

Advertising is an important funding mechanism for many online platforms and even public services. Decreasing advertising could make these services less available to people with low incomes.

5. H1 Essential features to maintain

In our current system we have old buildings, green spaces, systems of sharing (especially libraries and everyone's* rights), Finnish culture of frugality, and traditional low-emission activities such as picking berries and mushrooms, making and repairing textiles, our strong public sector, and high well-being, and maintaining them can support low-carbon good life.

*more commonly known as *everyman's rights*, but it is not a right only men have



1. Present concerns

high emissions & unequal distribution of well-being

unsustainable food, energy, mobility, production & consumption systems

unsustainable & unfair financial & gender systems

low-carbon practices uncommon, unsupported & socially unaccepted

2. Desirable future

low-emissions & high well-being for all

low-carbon practices accessible default options

plant-based food system, renewable-based energy system & mobility system not car-centered

reduced & fairly divided work, unpaid labour more appreciated & divided more evenly

no strict gender binary, femininity & androgyny valued

pleasant low-carbon activities

well-being prioritised over financial growth

3. Inspirational practice

plant-heavy diets

travelling by land & living car-free, bicycling & walking

renewable energy production

low consumption & sharing

low-carbon products & services

breaking gender binary

activities beyond paid labour

forerunner social groups

4. Innovations in play

universal basic income, reduced work time & doughnut model

gender minority rights & intersectional feminism

low-carbon defaults, sharing & non-commercial spaces/activities

limiting businesses & advertising

5. Features to maintain

existing buildings & green spaces

libraries & everyone's rights

frugality, repairing & foraging

strong public sector & high well-being

Figure 21 *Three horizons map of reducing emissions and increasing well-being in Finland by 2030.*

5.2

Low-Carbon Good Lives in 2030

Based on the interviews and my own imagination, I visioned how changes in our systems and infrastructures could enable current frontrunners to have even smaller footprints and increased well-being, and how they could drive change in social norms. They are based on the description of their current situations, and similar to user or persona scenarios common in design. These descriptions are meant to feel possible and positive, and rather than clear plans with specific figures, they are tiny stories serving as glimpses to possible low-carbon good lives of the future.

As they already had small footprints, the ways they eat, move and live do not have to change much visibly, but have changed to reflect the plans and dreams they had, and changed life situations. These changes are designed to reduce their emissions, but much of their remaining emission reductions are done in invisible ways, such as renewable district heating.

Instead of just these changes, their stories also focus on their positive social influence and doing low-carbon activities they enjoy. These are things that can be relevant to increasing their well-being, and be enabled by society level and systemic changes, such as reduced working time and universal basic income.

The impact of societal changes and their own actions are visible in their carbon footprint, but also in their well-being, the emissions of others, and social norms. These impacts are difficult to measure, but they are important.

*She now feels like she is
allowed to exist,
that she is an accepted
member of society.*

Aura in 2030

Now in her mid 30s, Aura is feeling better. Universal basic income reduces her stress and shame related to income and having to constantly apply for financial aid. She now feels like she is allowed to exist, that she is an accepted member of society. She is also able to do some paid freelance work to companies focused on sustainability, without the pay being cut from her basic income. She is still an activist, having been involved and started many projects focused on sustainable living, and the community is very important to her.

Renewable district heating makes her housing emissions significantly smaller. She has moved in with a partner to a 40m² one bedroom apartment which reduces her living space per person while living in a larger space. The home is in a renovated building from the 1950s, and has multifunctional and adaptable furniture, so that she can turn the bedroom into her art studio during the

day. Some of the furniture is upcycled by the Reuse centre from the broken pieces they receive. She has also made some herself at the library's wood shop, with instructions she found online, with pieces from the Reuse centre's free section, using the library's bike trailer to transport them.

Waste food has become more easily available after it became illegal for grocery stores to throw food away. She also does urban gardening in a nearby park, which she started in secret, but that is now supported by the city, and there are at least fruit trees in most parks.

She cycles everywhere, and has started making longer cycling trips with her partner, which has become easier with bike lanes and services to cyclists being added to highways. They are planning to cycle to Southern Europe next summer, and take the train back.

*He has not felt a
pressure to get a high
paying full-time job
to get out of debt.*

Leo in 2030

Now in his late 20s, Leo lives in the capital region. He moved there to study, and stayed for the music circles. He lives in a tiny apartment that has been made out of old office space turned to small apartments. The building has large common spaces, and he spends a lot of time at the campus, in bars and other music venues, as well as outside in parks and at the beach. His home is quite minimalist as he doesn't own much, but borrows most things from the library. He uses a shared cargo bike to carry his instruments around, and sometimes he rents an electric van.

Universal basic income has enabled him to not have to take out student loans, so he has not felt a pressure to get a high paying full-time job to get out of debt. It also makes it possible for him to try out projects that don't always end up becoming anything successful or

permanent, and to follow his passion. He has several active music projects, has done various part-time jobs related to music, and does climate activism as well. He actively supports colleagues, especially women and minorities, and speaks up when other men say or do harmful things.

He needs to be less flexible with his vegan diet with his family, as they have reduced their dairy intake as dairy became significantly more expensive after losing its government subsidies. Plant based alternatives have become cheaper, and easier available, so he doesn't have to make a big deal about eating vegan at all. Vegan is starting feel like an unnecessary label to him, as he still sometimes makes exceptions, and most of his friends eat vegan food most of the time.

*He has started
working much less and
has more free time.*

Ville in 2030

Now in his mid 40s he has a higher position at work and more power. He has used it to make the company's sustainability talk into action, and he has made a conscious effort to give power to women and minorities. He has started working much less, so his income hasn't gone up, and he has more free time.

He has moved houses and changed workplaces a couple of times, having started green energy projects in each place, with increasing government support for the transition making it easier. He is now living in a detached house originally built in the 70s that he is renovating, and has already installed geothermal heating and solar panels.

He has reduced his consumption through new renting and sharing services that he has been an early adopter of. He is also renting and lending his own possessions to others.

He has continued being vegan, as have his children who are now teenagers, and who are making veganism more normal among their friends (who in turn are affecting their parents' eating habits). Ville's children are the reason he started to work less, as he wanted to spend more time with them. As they're becoming more independent, he has also gotten into new hobbies, such as berry and mushroom picking, and a friend is teaching him to sail.

*She spends a lot of time
with her friends and
family, and has met a lot
of new people as well.*

Tuulia in 2030

Now in her late 70s, she lives with some of her friends. Having hinted towards it for years, she was able to finally convince them when they heard of fabulous apartments originally built in the 1930s were renovated to be more accessible. The building also has services designed as a part of the concept that make life easier for the elderly without it feeling like a nursing home. There is for example a cafeteria like but stylish restaurant downstairs.

She has continued eating lots of plants, and some animal products, mostly fish. As the restaurant downstairs has such good vegan meals, and she cooks plant heavy, the diet of her friends has changed to contain a lot less meat as well. She has

been able to continue gardening on the roof, and on their balcony.

She lives so close to everything that she usually walks everywhere, or has things delivered or digital, but she sometimes needs a taxi, which are electric or use other alternative fuel sources.

She spends a lot of time with her friends and family, and has met a lot of new people as well. Once a week she hosts a sewing circle where she teaches other people to repair clothing, and she's been surprised with how many different kinds of people have been interested, including a rather large amount of men both young and old.

6 Discussion & Conclusion

6.1

Low-Carbon Good Life

Average lifestyles in Finland are very high in emissions and not in line with the 1.5 degree goal (IGES et al., 2019). Previous work on 1.5 degree lifestyles (IGES et al., 2019; Demos Helsinki & Sitra, 2020) has presented low-carbon lifestyles as theoretically possible and aspirational, but have not studied them as currently practiced ways to live. They have relied mostly on existing solutions, and my findings support this argument that low-carbon life is already possible without us having to wait for new technological innovations.

In this study I found over 400 people who already have lifestyle carbon footprints below the Finnish average, and over 200 who are near or below the 2030 goal. They have been able to reduce their footprints while most of them are still tied to our carbon intensive systems. Most of them have diets of reduced animal products, don't use private cars for daily mobility, and have alternative practices that reduce their need to buy new things, but are unable to change their heating system. They are able to impact some of their consumption emissions, but face

infrastructural barriers. To get from 2.5 ton lifestyles to 0.7 tons, energy system change is essential, but it alone is very unlikely to be enough to get those living average lifestyles to get low enough footprints.

Previous work has been focused on reducing and changing the consumption practices that cause most of our emissions. And while this is important, it is a rather technical point of view reducing low-carbon lives to figures and reductions. I found that things that have quite small impacts on our footprints, such as repairing clothing and picking berries, can be common and important parts of low-carbon lives. Many of these things are related to systems that we have that could be important parts of a more sustainable society and its acceptability, such as libraries and everyone's rights to nature. Pleasant activities and our social lives are essential to us, but rarely considered in discussions and tools related to lifestyle carbon footprints.

The focus has been on technical systems, but also individuals. Like O'Brien (2018) argues, in sustainability

transitions we need to also consider the social structures, and worldviews behind them. One of these is our financial system, for which I suggest Raworth's (2017) doughnut model. In a Nordic welfare state, the idea that the function and value of our economy should be in enabling human well-being does not seem far away. But when looking at individuals and our systems and ideas related to work and rest, it does feel that we often see the function and value of humans in enabling the well-being of the economy.

While we have a strong social foundation in our doughnut in Finland, like illustrated by O'Neill et al. (2018), there are still ways in which our well-being could be increased simultaneously with reducing emissions. I illustrated these as carbon footprint and well-being doughnuts for average and 2.5 ton lifestyles (figure 22 & 23). They are not based on specific figures, but rather aim to show that there are possible points of overlapping benefits.

While the benefits in other categories are clear, negative effects of our financial system were still common for those with low footprints. While some had reduced working, many others were still stressed and burned out. And with social relationships there were both negative and positive effects.

One significant benefit not visible in the graphs is increased psychological well-being, which could also be considered its own category. Not visible in this model is also those people who have unfilled needs in their well-being unrelated to overconsumption, as there are Finns who have too little consumption in some categories. The graphs simplify the matter, but show how current average lifestyles could be improved from the point of view of emissions and well-being, and how current low-carbon lives are a large improvement.

The positive social effects were related to being part of social groups and having relationships with others who share similar values and practices, and the social spreading of low-carbon practices. As supported by Westlake (2017) and Bolderdijk & Jans (2021), those who have adopted low-carbon practices can influence those who have not.

A larger number of subjects had been inspired by others to adopt low-carbon practices, than thought they had inspired others themselves. But as pointed out by Bolderdijk & Jans (2021) they might have had a larger impact on the views of majority members unknowingly.

In the examples given by forerunners of them knowing when they had inspired others, influencing one's parents to eat

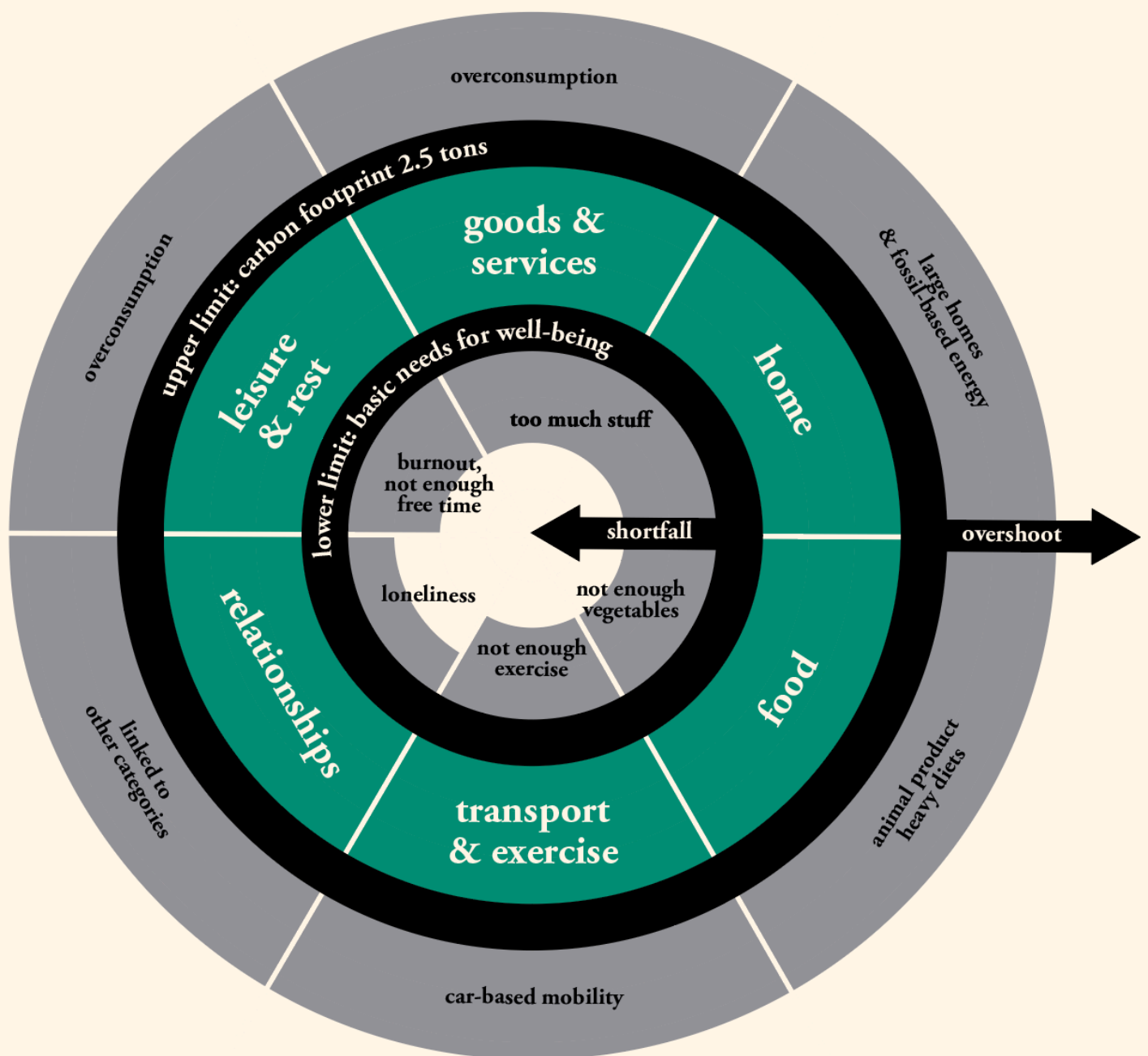


Figure 22 A carbon footprint and well-being doughnut of the average Finnish lifestyle. Not based on specific figures, but aiming to show potential points for improvements. All emissions are over the limit, and there are linked well-being aspects in the inside of the doughnut, that could be improved simultaneously with reducing emissions.

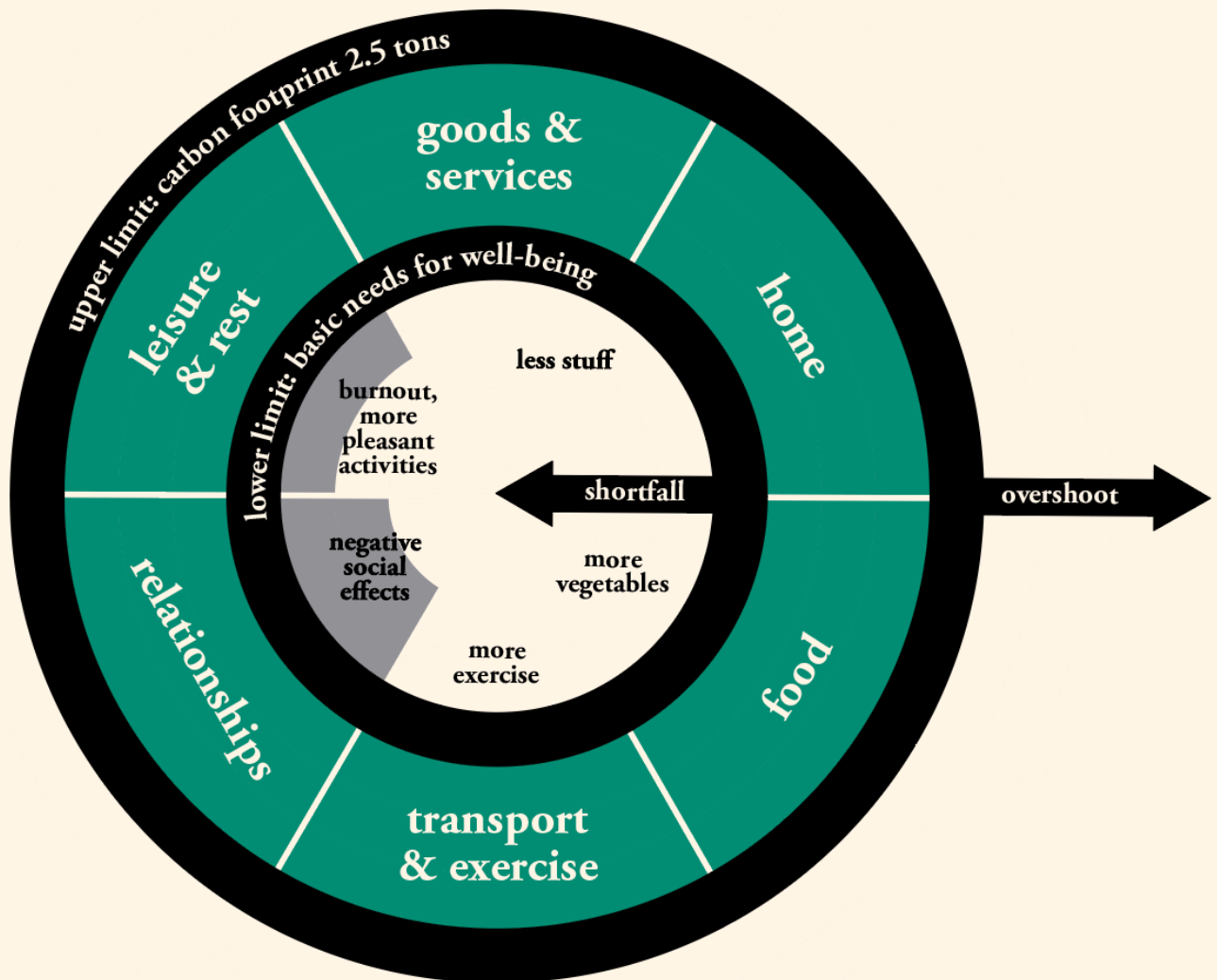


Figure 23 Carbon footprint and well-being doughnut of a 2.5 ton lifestyle, based on the findings of this study. Emissions are within the upper limit, and well-being is increased with low-carbon lifestyle practices. Burnout has not dissappeared, and there are new negative social effects.

less meat was mentioned. Minority members can influence majority members especially when they are seen as members of the same larger group (Bolderdijk & Jans, 2021). Families might be one group where membership is less easily lost, and where influencing can so be easier and more likely.

But low-carbon lifestyles can cause others to react negatively, as supported by Zurc et al. (2020) and others. I found several negative social effects related to low-carbon practices breaking social norms, such as feeling or being left out and having to explain their choices. These effects are related to different social contexts, groups and identities.

I also found out that to avoid these negative effects, people sometimes avoid talking about their low-carbon practices, and even engaging in them. This can help them maintain their social group identities. In the best cases this flexibility can be a compromise making the whole group to behave in some medium way. But it can also greatly reduce the social influence and inspiration effects. It also creates a negative feedback loop where avoiding low-carbon behaviours in social situations makes them less common and normal, and so less accepted, causing them to be avoided. And very importantly, this avoidance of low-carbon behaviours in social situations is

a sign that low-carbon practices are not currently socially acceptable.

One social structure related to low-carbon practices and their acceptability is gender. The relationship between gender and environmental impact has also been discussed in previous literature.

Consistent with previous research, I found the men in my sample to have larger footprints than women. Also consistent with previous gender related research was the finding of men experiencing negative social effects related to low-carbon practices breaking the norms of masculinity.

Brough et al. (2015) suggest more masculine branding of green products as a possible solution, but this does nothing to address the systemic and structural problems at root, which cause much more harm than just the carbon intensive consumption practices of men. I suggest instead that making the gender binary and gender norms less strict, and giving power and valuing women and non-binary and gender non-conforming people is a key change we need make, to reach low-carbon good life for all.

In addition to men and women, I also included non-binary people, and they had even lower footprints than binary men and women. And when looking

at cis straight people and comparing them to LGBTQ+ people, the largest difference was between straight cis men and queer men, and there was very little difference between genders when looking at LGBTQ+ people. Queerness can make it easier to break social norms, and there is overlap with social groups and environments that are positive towards breaking gender norms and low-carbon practices.

My findings also challenge the Finnish sufficient minimum budgets (Lehtinen & Aalto, 2018) as I found out that with consumption that is lower, or at least different, from the budgets does not decrease, and can even increase, quality of life. Low-carbon lifestyles had positive well-being effects, including positive emotional and psychological effects. Low-carbon life feels good.

Earlier research by Syke (2019) shows how our carbon footprints rise with income, and I also found most people with low carbon footprints to have low incomes. They did however experience their life as more plentiful than their reachable level of consumption. Life

feeling plentiful is possible without plentiful consumption.

But the minimum budgets can be seen as reflecting the level and way of consumption we see as acceptable, and the negative social effects found in this study suggest that low-carbon lifestyles are not always socially accepted.

I argue that while low-carbon life is already possible, to enable its spreading, even lower emissions, and increased and more evenly divided well-being, we need significant system level changes to both physical and social structures.

These changes could also increase the social influence between individuals, and enable not just low-carbon but good life.

6.2

Limitations and Suggestions for Future Research

This study was focused on human well-being and lifestyle carbon footprints, making it very human-centered, and non-human well-being or other ecological impacts were not included. Including them could enable finding intersecting benefits, and possibly also contradictions, and these should be considered as relevant parts of sustainable good lives. While for example the benefits of plant-based diets to both farmed and wild animals and impacts on planetary boundaries beyond emissions have been studied, combining this kind of knowledge with low-carbon good life could enable more holistic understanding of sustainability and well-being.

The pandemic restricted visual observation of low-carbon lifestyles, and prevented creating a visual production part based on photo- or videography. To make low-carbon lifestyles feel more acceptable and possible to more people, more representation of low-carbon lives is needed in all kinds of media. In this study only six individuals were interviewed, and four of them used as examples and personas. More examples and personas would be needed to provide relatable characters to even more people in different contexts. In addition

to studying and creating more of these inspiring personas and images, the lack of them, and the abundance of images of carbon-intensive lives in different media, could be studied as well.

While there are earlier studies supporting the finding of men having larger footprints than women, a study representative of the whole population would be needed to confirm if cis straight men have larger footprints than women and LGBTQ people in general. To consider this as a social phenomenon, specific contexts and groups could also be studied to see if this difference disappears if low-carbon practices are more common and accepted, for example in activist groups or art schools. As one person does not exist in just one social context, and one social context can include different kinds of individuals, the mixtures of these can have multiple interesting effects on consumption.

My own experience of low-carbon practices being easier due to being queer was shared by some subjects and supported by other findings, but as I had not been sure if I could find people belonging to minorities who had small carbon footprints, and wanted to look at the social effects more broadly, this effect

could be studied further focusing on just queer people, or other minorities.

Other minorities than gender and sexuality were not strongly represented in the sample. While disabilities were briefly considered in relation to barriers, they could also be looked at in relation to identity and social effects. The sample was also predominantly white, and the effects of belonging to an ethnic minority were not considered. What sustainable life is like, its barriers, possibilities and social effects might be different for different minorities.

Minority and forerunner points of view were used here, but their possibilities in transition design and policy making could be utilised and experimented more on. For example testing the potential of having just one or two forerunners in a group of mainstream people, and what their impact is, and how it could be emphasized.

While this study focused on forerunners with small carbon footprints, their social impact might be supported by allies with larger footprints but positive attitudes and actions towards low-carbon practices. This social impact could be studied by focusing on a combination of forerunners and allies in social groups.

The negative social impacts of

low-carbon practices found in this study tell of low-carbon life not being socially acceptable. While I aimed to imagine some solutions, further work could be done about reducing these negative effects and changing our high-carbon social norms.

There are many ways to live low-carbon, with different alternatives being available with different incomes, life situations and locations. Most common actions were not related to housing, food, or mobility, but to a lower consumption of goods. Quality of life was improved with lower emissions, related to low-carbon activities feeling good and pleasant. Further studies could be done on how pleasant low-carbon activities, lower consumption of goods and services, and social effects could be considered and included in specific contexts, such as carbon footprint calculators, and national and municipal emission reduction plans.

The focus of this study was people with small lifestyle carbon footprints. But it is likely that the negative social effects found in this study are even stronger and more relevant as barriers for those who have not been able to lower their emissions. Those with larger footprints could also be studied to find what kind of example personas would be most impactful for them.

The visioning was based on the forerunner point of view and my own imagination, and the inclusion of forerunners in visioning and more positive visions of the future are needed. But this work could also be continued by visioning low-carbon good life in the future, considering social and well-being impacts, with different stakeholders, including but not limited to forerunners.

Work and rest were looked at only briefly in this study, but there were findings of people with low-carbon footprints still having high amounts of burnout, and those who were getting enough sleep frequently, having much smaller footprints than those who only rarely got enough sleep. These connections could be studied further to see if and how sleep and rest could be transformational tools, and also desirable ends in themselves, for simultaneously increasing well-being and reducing emissions, as a part of changing the priorities of our economic system.

Despite leaving out questions from the survey that would have been relevant and interesting for this study, and doing less interviews than I would have wanted, I still collected much more data than I anticipated, so I prioritized answering the research questions. But more of the data collected could be analysed further, especially the fixed survey answers.

Due to the lack of earlier studies focusing specifically on current low-carbon lifestyles, and due to the nature of the subject (some larger context is very relevant to low-carbon lifestyles), the focus of this study was quite broad. But there were several interesting findings that could be studied further.

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